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1999 CTS AMENDMENTS
to the
Forestry
Guide to Standards and Implementation

Summary of Curriculum Changes

Courses deactivated:

- FOR1040: Woods Survival 1
- FOR2040: Woods Survival 2

These courses can be replaced with WLD1030: Outdoor Experiences 1 and WLD2030: Outdoor Experiences 2.

Section A

1. **Remove** pages A.1 to A.8 (1997) and **replace** with new pages A.1 to A.8 (1999).

Section B

1. **Remove** pages B.5 to B.8 (1997) and **replace** with new pages B.5 to B.8 (1999).

Section C

1. **Remove** pages C.1 to C.8 (1997) and **replace** with new pages C.1 to C.8 (1999).

Section D

1. **Remove** pages D.1–2 (1997) and **replace** with new pages D.1–2 (1999).
2. **Remove** pages D.11 to D.16 (1997) and **replace** with new pages D.11 to D.16 (1999).

Section E

1. **Remove** pages E.1–2 (1997) and **replace** with new pages E.1–2 (1999).
2. **Remove** pages E.15 to E.22 (1997) and **replace** with new pages E.15 to E.22 (1999).

Section G

1. **Remove** pages G.3 and G.4 (1997) and **replace** with new pages G.3 and G.4 (1999).
2. **Remove** pages G.27–28 (1997) and **replace** with new pages G.27–28 (1999).
3. **Remove** pages G.47 to G.52 (1997) and **replace** with new pages G.47 to G.52 (1999).
4. **Remove** pages G.81 to G.84 (1997) and **replace** with new pages G.81 to G.84 (1999).

Section H

1. **Remove** pages H.5 to H.10 (1997) and **replace** with new pages H.5 to H.10 (1999).

move pages H.13–14 (1997) and **replace** with new pages H.13–14 (1999).

n I

emove pages I.1 to I.56 (1997) and **replace** with new pages I.1 to I.8 (1999).

n J

emove pages J.1–2 (1997) and **replace** with new pages J.1–2 (1999).

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2. **Delete** pages J.17 to J.22 (1997).

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CAREER AND TECHNOLOGY STUDIES

A. PROGRAM RATIONALE AND PHILOSOPHY

Through Career and Technology Studies (CTS), secondary education in Alberta is responding to the many challenges of modern society, helping young people develop daily living skills and nurturing a flexible, well-qualified work force.

In Canada's information society, characterized by rapid change in the social and economic environment, students must be confident in their ability to respond to change and successfully meet the challenges they face in their own personal and work lives. In particular, they make decisions about what they will do when they finish high school. Many students will enter the work force, others will continue their education. All students face the challenges of growing independence and responsibility, and of entering post-secondary programs and/or the highly competitive workplace.

Secondary schools also face challenges. They must deliver, on a consistent basis, high quality, cost-effective programs that students, parents and the community find credible and relevant.

CTS helps schools and students meet these challenges. Schools can respond more efficiently and effectively to student and community needs and expectations by taking advantage of the opportunities in the CTS curriculum to design courses and access school, community and distance learning resources. Students can develop the confidence they need as they move into adult roles by assuming increased responsibility for their learning; cultivating their individual talents, interests and abilities; and by defining and acting on their goals.

As an important component of education in Alberta secondary schools, CTS promotes student achievement by setting clear expectations and recognizing student success. Students in CTS develop competencies—the knowledge, skills and attitudes they are expected to demonstrate, that is, what they know and what they are able to do.

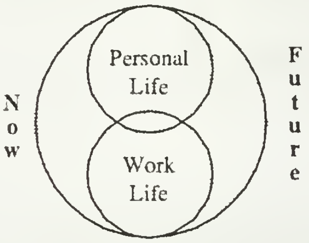
Acquired competencies can be applied now and in the future as students make a smooth transition into adult roles in the family, community, workplace and/or further education. To facilitate this transition, clearly stated expectations and standards have been defined in cooperation with teachers, business and industry representatives and post-secondary educators.

CTS offers all students important learning opportunities. Regardless of the particular area of study chosen, *students* in CTS *will*:

- develop skills that can be applied in their daily lives, now and in the future
- refine career-planning skills
- develop technology-related skills
- enhance employability skills
- apply and reinforce learnings developed in other subject areas.

In CTS, students build skills they can apply in their everyday lives. For example, in the CTS program, particularly at the introductory levels, students have the opportunity to improve their ability to make sound consumer decisions and to appreciate environmental and safety precautions.

CAREERS



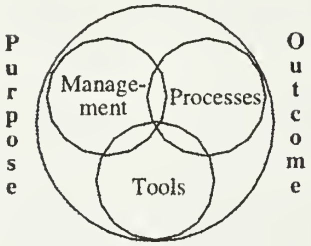
A career encompasses more than activities just related to a person's job or occupation; it involves one's personal life in both local and global contexts; e.g., as a family member, a friend, a community volunteer, a citizen of the world.

The integration of careers throughout the CTS program helps students to make effective career decisions and to target their efforts. CTS students will have the opportunity to expand their knowledge about careers, occupations and job opportunities, as well as the education and/or training requirements involved. Also, students come to recognize the need for lifelong learning.

Students in CTS have the opportunity to use and apply technology and systems effectively and efficiently. This involves:

- a decision regarding which processes and procedures best suit the task at hand
- the appropriate selection and skilled use of the tools and/or resources available
- an assessment of and management of the impact the use of the technology may have on themselves, on others and on the environment.

TECHNOLOGY



Integrated throughout CTS are employability skills, those basic competencies that help students develop their personal management and social skills. Personal management skills are improved as students take increased responsibility for their learning, design innovative solutions to problems and challenges, and manage resources effectively and efficiently. Social skills improve through learning experiences that require students to work effectively with others, demonstrate teamwork and leadership, and maintain high standards in safety and accountability.

As well as honing employability skills, CTS reinforces and enhances learnings developed in core and other optional courses. The curriculum emphasizes, as appropriate, the effective application of communication and numeracy skills.

In addition to the common outcomes described above, students focusing on a particular area of study will develop career-specific competencies that support entry into the workplace and/or related post-secondary programs. Career-specific competencies can involve understanding and applying appropriate terminology, processes and technologies related to a specific career, occupation or job.

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PROGRAM OUTCOMES

The program outcomes describe the basic competencies integrated throughout the CTS program.

Within an applied context relevant to personal goals, aptitudes and abilities; *the student* in CTS *will:*

- demonstrate the basic knowledge, skills and attitudes necessary for achievement and fulfillment in personal life
- develop an action plan that relates personal interests, abilities and aptitudes to career opportunities and requirements
- use technology effectively to link and apply appropriate tools, management and processes to produce a desired outcome
- develop basic competencies (employability skills), by:
    - selecting relevant, goal-related activities, ranking them in order of importance, allocating necessary time, and preparing and following schedules (managing learning)
    - linking theory and practice, using resources, tools, technology and processes responsibly and efficiently (managing resources)
    - applying effective and innovative decision-making and problem-solving strategies in the design, production, marketing and consumption of goods and services (problem solving and innovation)
    - demonstrating appropriate written and verbal skills, such as composition, summarization and presentation (communicating effectively)
    - participating as a team member by working cooperatively with others and contributing to the group with ideas, suggestions and effort (working with others)
    - maintaining high standards of ethics, diligence, attendance and punctuality, following safe procedures consistently, and recognizing and eliminating potential hazards (demonstrating responsibility).

PROGRAM ORGANIZATION

CURRICULUM STRUCTURE

Career and Technology Studies is organized into **strands** and **courses**.

Strands in CTS define competencies that help students:

- build daily living skills
- investigate career options
- use technology (managing, processes, tools) effectively and efficiently
- prepare for entry into the workplace and/or related post-secondary programs.

In general, strands relate to selected industry sectors offering positive occupational opportunities for students. Some occupational opportunities require further education after high school, and some allow direct entry into the workplace. Industry sectors encompass goods-producing industries, such as agriculture, manufacturing and construction; and service-producing industries, such as business, health, finance and insurance.

Courses are the building blocks for each strand. They define what a student is expected to know and be able to do (exit-level *competencies*). Courses also specify prerequisites. Recommendations for course parameters, such as instructional qualifications, facilities and equipment can be found in the guides to implementation.

The competencies a student must demonstrate to achieve success in a course are defined through *general outcomes*. Senior high school students who can demonstrate the general outcomes defined for a CTS course; i.e., who have the designated competencies, will qualify for 1 credit toward their high school diploma.

Specific outcomes provide a more detailed framework for instruction. Within the context of the general outcomes, the specific outcomes further define the knowledge, skills and attitudes the student should acquire.

The following chart shows the 22 strands that comprise the CTS program and the number of 1-credit courses available in each strand.

Strand	No. of Courses
1. Agriculture	33
2. Career Transitions	31
3. Communication Technology	33
4. Community Health	31
5. Construction Technologies	46
6. Cosmetology Studies	58
7. Design Studies	31
8. Electro-Technologies	37
9. Energy and Mines	26
10. Enterprise and Innovation	8
11. Fabrication Studies	41
12. Fashion Studies	29
13. Financial Management	14
14. Foods	37
15. Forestry	21
16. Information Processing	48
17. Legal Studies	13
18. Logistics	12
19. Management and Marketing	20
20. Mechanics	54
21. Tourism Studies	24
22. Wildlife	17

LEVELS OF ACHIEVEMENT

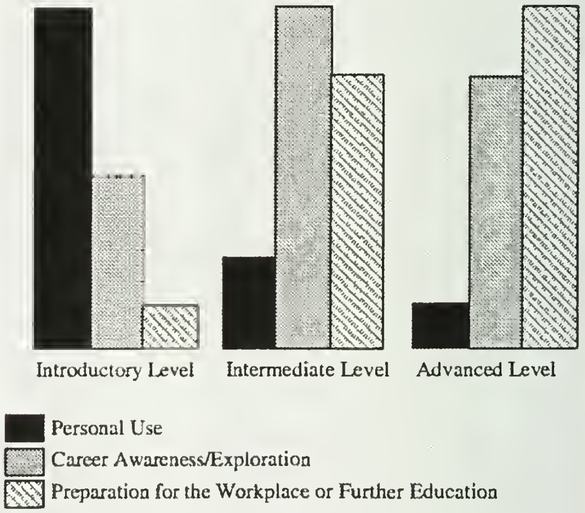
Courses are organized into three levels of achievement: **introductory**, **intermediate** and **advanced**. As students progress through the levels, they will be expected to meet higher standards and demonstrate an increased degree of competence, in both the program outcomes and the general outcomes defined for individual courses.

Introductory level courses help students build daily living skills and form the basis for further learning. Introductory courses are for students who have no previous experience in the strand.

Intermediate level courses build on the competencies developed at the introductory level. They provide a broader perspective, helping students recognize the wide range of related career opportunities available within the strand.

Advanced level courses refine expertise and help prepare students for entry into the workplace or a related post-secondary program.

The graph below illustrates the relative emphasis on the aspects of career planning at each of the levels.



CURRICULUM AND ASSESSMENT STANDARDS

Curriculum standards in CTS define what students must know and be able to do. Curriculum standards are expressed through the program outcomes for CTS, and through general and specific outcomes defined for individual courses within each strand.

Assessment standards define how student performance is to be judged. In CTS, each assessment standard defines the conditions and criteria to be used for assessing the competencies associated with each general outcome. To receive credit for a course, students must demonstrate competency at the level specified by the conditions and criteria defined for each general outcome.

Students throughout the province receive a fair and reliable assessment as they use the standards to guide their efforts, thus ensuring they participate more effectively and successfully in the learning and assessment process. Standards at advanced levels are, as much as possible, linked to workplace and post-secondary entry-level requirements.

TYPES OF COMPETENCIES

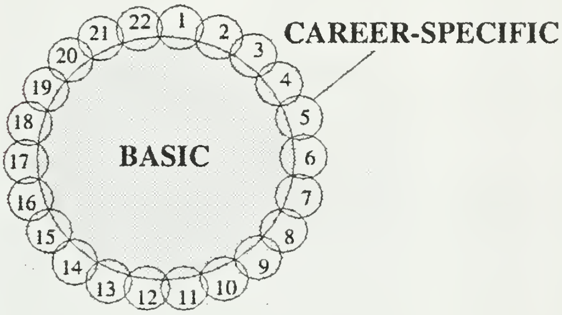
Two types of competencies are defined within the CTS program: basic and career-specific.

Basic competencies are generic to any career area and are developed within each course. Basic competencies include:

- personal management; e.g., managing learning, being innovative, ethics, managing resources
- social; e.g., communication, teamwork, leadership and service, demonstrating responsibility (safety and accountability).

Career-specific competencies relate to a particular strand. These competencies build daily living skills at the introductory levels and support the smooth transition to the workplace and/or post-secondary programs at the intermediate and advanced levels.

The model below shows the relationship of the two types of competencies within the 22 strands of the CTS program.



BASIC COMPETENCIES REFERENCE GUIDE

The chart below outlines basic competencies that students endeavour to develop and enhance in each of the CTS strands and courses. Students' basic competencies should be assessed through observations involving the student, teacher(s), peers and others as they complete the requirements for each course. In general, there is a progression of task complexity and student initiative as outlined in the Developmental Framework★. **As students progress through Stages 1, 2, 3 and 4 of this reference guide, they build on the competencies gained in earlier stages.** Students leaving high school should set themselves a goal of being able to demonstrate Stage 3 performance.

Suggested strategies for classroom use include:

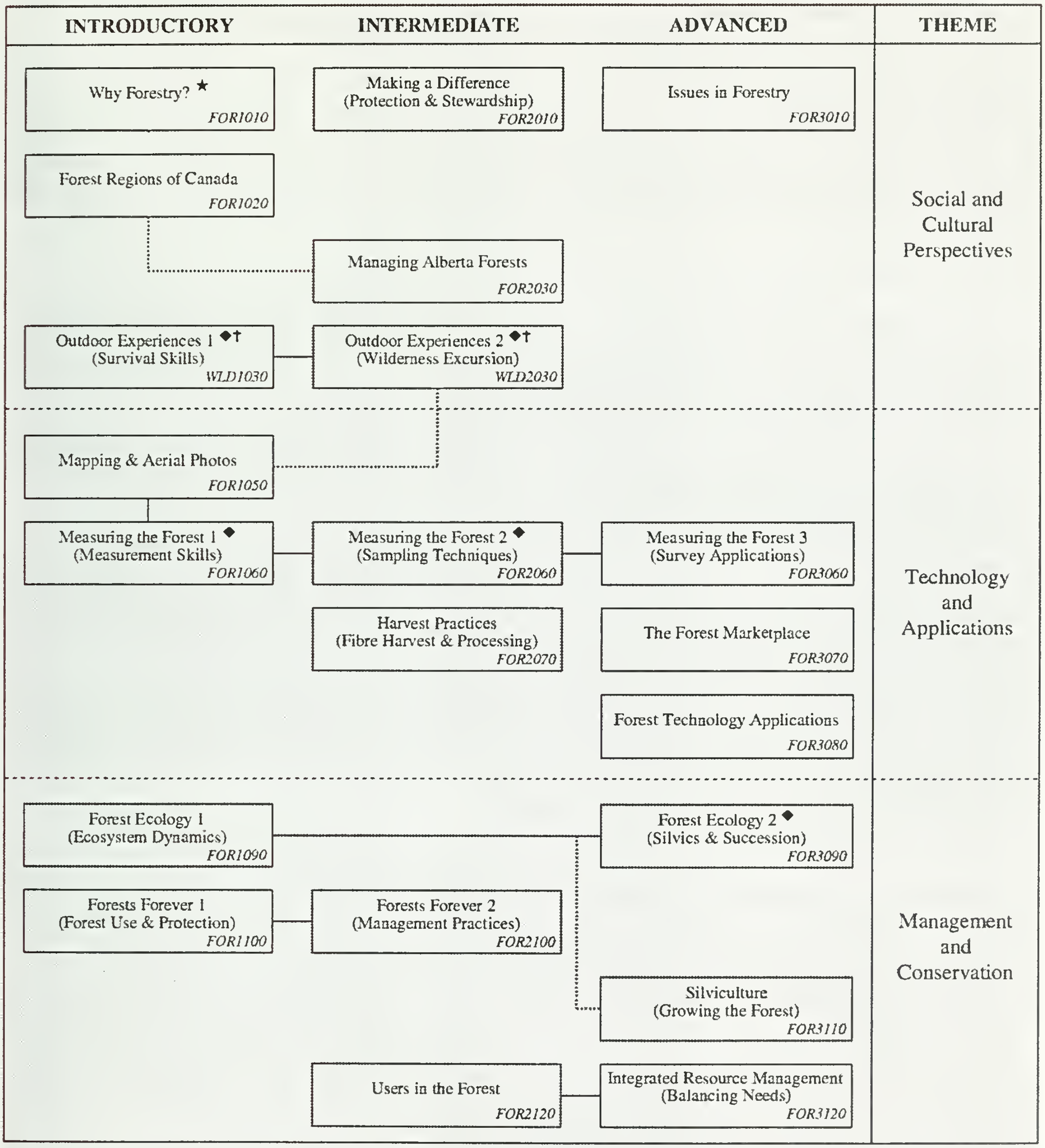
- having students rate themselves and each other
- using in reflective conversation between teacher and student
- highlighting areas of strength
- tracking growth in various CTS strands
- highlighting areas upon which to focus
- maintaining a student portfolio.

Stage 1— *The student:*	**Stage 2**— *The student:*	**Stage 3**— *The student:*	**Stage 4**— *The student:*
Managing Learning			
☐ comes to class prepared for learning	☐ →→	☐ →→	☐ →→
☐ follows basic instructions, as directed	☐ follows instructions, with limited direction	☐ follows detailed instructions on an independent basis	☐ →→
	☐ sets goals and establishes steps to achieve them, with direction	☐ sets clear goals and establishes steps to achieve them	☐ demonstrates self-direction in learning, goal setting and goal achievement
☐ acquires specialized knowledge, skills and attitudes	☐ applies specialized knowledge, skills and attitudes in practical situations	☐ transfers and applies specialized knowledge, skills and attitudes in a variety of situations	☐ transfers and applies learning in new situations; demonstrates commitment to lifelong learning
☐ identifies criteria for evaluating choices and making decisions	☐ identifies and applies a range of effective strategies for solving problems and making decisions	☐ uses a range of critical thinking skills to evaluate situations, solve problems and make decisions	☐ thinks critically and acts logically to evaluate situations, solve problems and make decisions
☐ uses a variety of learning strategies	☐ explores and uses a variety of learning strategies, with limited direction	☐ selects and uses effective learning strategies	☐ →→
		☐ cooperates with others in the effective use of learning strategies	☐ provides leadership in the effective use of learning strategies
Managing Resources			
☐ adheres to established timelines; uses time/schedules/planners effectively	☐ creates and adheres to timelines, with limited direction; uses time/schedules/planners effectively	☐ creates and adheres to detailed timelines on an independent basis; prioritizes task; uses time/schedules/planners effectively	☐ creates and adheres to detailed timelines; uses time/schedules/planners effectively; prioritizes tasks on a consistent basis
☐ uses information (material and human resources), as directed	☐ accesses and uses a range of relevant information (material and human resources), with limited direction	☐ accesses a range of information (material and human resources), and recognizes when additional resources are required	☐ uses a wide range of information (material and human resources) in order to support and enhance the basic requirement
☐ uses technology (facilities, equipment, supplies), as directed, to perform a task or provide a service	☐ uses technology (facilities, equipment, supplies), as appropriate, to perform a task or provide a service, with minimal assistance and supervision	☐ selects and uses appropriate technology (facilities, equipment, supplies) to perform a task or provide a service on an independent basis	☐ recognizes the monetary and intrinsic value of managing technology (facilities, equipment, supplies)
☐ maintains, stores and/or disposes of equipment and materials, as directed	☐ maintains, stores and/or disposes of equipment and materials, with limited assistance	☐ maintains, stores and/or disposes of equipment and materials on an independent basis	☐ demonstrates effective techniques for managing facilities, equipment and supplies
Problem Solving and Innovation			
☐ participates in problem solving as a process ☐ learns a range of problem-solving skills and approaches	☐ identifies the problem and selects an appropriate problem-solving approach, responding appropriately to specified goals and constraints	☐ thinks critically and acts logically in the context of problem solving	☐ identifies and resolves problems efficiently and effectively
☐ practices problem-solving skills by responding appropriately to a clearly defined problem, specified goals and constraints, by: – generating alternatives – evaluating alternatives – selecting appropriate alternative(s) – taking action	☐ applies problem-solving skills to a directed or a self-directed activity, by: – generating alternatives – evaluating alternatives – selecting appropriate alternative(s) – taking action	☐ transfers problem-solving skills to real-life situations, by generating new possibilities ☐ prepares implementation plans ☐ recognizes risks	☐ identifies and suggests new ideas to get the job done creatively, by: – combining ideas or information in new ways – making connections among seemingly unrelated ideas – seeking out opportunities in an active manner

Stage 1— *The student:*	**Stage 2**— *The student:*	**Stage 3**— *The student:*	**Stage 4**— *The student:*
Communicating Effectively			
☐ uses communication skills; e.g., reading, writing, illustrating, speaking	☐ communicates thoughts, feelings and ideas to justify or challenge a position, using written, oral and/or visual means	☐ prepares and effectively presents accurate, concise, written, visual and/or oral reports providing reasoned arguments	☐ negotiates effectively, by working toward an agreement that may involve exchanging specific resources or resolving divergent interests
☐ uses language in appropriate context	☐ uses technical language appropriately	☐ encourages, persuades, convinces or otherwise motivates individuals	☐ negotiates and works toward a consensus
☐ listens to understand and learn	☐ listens and responds to understand and learn	☐ listens and responds to understand, learn and teach	☐ listens and responds to understand, learn, teach and evaluate
☐ demonstrates positive interpersonal skills in selected contexts	☐ demonstrates positive interpersonal skills in many contexts	☐ demonstrates positive interpersonal skills in most contexts	☐ promotes positive interpersonal skills among others
Working with Others			
☐ fulfills responsibility in a group project	☐ ───►───►	☐ seeks a team approach, as appropriate, based on group needs and benefits; e.g., idea potential, variety of strengths, sharing of workload	☐ leads, where appropriate, mobilizing the group for high performance
☐ works collaboratively in structured situations with peer members	☐ cooperates to achieve group results	☐ works in a team or group: – encourages and supports team members – helps others in a positive manner – provides leadership/ followership as required – negotiates and works toward consensus as required	☐ understands and works within the context of the group
☐ acknowledges the opinions and contributions of others in the group	☐ maintains a balance between speaking, listening and responding in group discussions ☐ respects the feelings and views of others		☐ prepares, validates and implements plans that reveal new possibilities
Demonstrating Responsibility			
Attendance			
☐ demonstrates responsibility in attendance, punctuality and task completion	☐ ───►───►	☐ ───►───►	☐ ───►───►
Safety			
☐ follows personal and environmental health and safety procedures	☐ recognizes and follows personal and environmental health and safety procedures	☐ establishes and follows personal and environmental health and safety procedures	☐ transfers and applies personal and environmental health and safety procedures to a variety of environments and situations
☐ identifies immediate hazards and their impact on self, others and the environment	☐ identifies immediate and potential hazards and their impact on self, others and the environment	☐ ───►───►	☐ ───►───►
☐ follows appropriate/emergency response procedures	☐ ───►───►	☐ ───►───►	☐ ───►───►
			☐ demonstrates accountability for actions taken to address immediate and potential hazards
Ethics			
☐ makes personal judgements about whether or not certain behaviours/actions are right or wrong	☐ assesses how personal judgements affect other peer members and/or family; e.g., home and school	☐ assesses the implications of personal/group actions within the broader community; e.g., workplace	☐ analyzes the implications of personal/group actions within the global context
			☐ states and defends a personal code of ethics as required

★**Developmental Framework** • *Simple task* • *Structured environment* • *Directed learning*	• *Task with limited variables* • *Less structured environment* • *Limited direction*	• *Task with multiple variables* • *Flexible environment* • *Self-directed learning, seeking assistance as required*	• *Complex task* • *Open environment* • *Self-directed/self-motivated*

SCOPE AND SEQUENCE FORESTRY


INTRODUCTORY
INTERMEDIATE
ADVANCED
THEME
Why Forestry? ★ FOR1010
Making a Difference (Protection & Stewardship) FOR2010
Issues in Forestry FOR3010
Forest Regions of Canada FOR1020
Managing Alberta Forests FOR2030
Outdoor Experiences 1 ◆† (Survival Skills) WLD1030
Outdoor Experiences 2 ◆† (Wilderness Excursion) WLD2030
Social and Cultural Perspectives
Mapping & Aerial Photos FOR1050
Measuring the Forest 1 ◆ (Measurement Skills) FOR1060
Measuring the Forest 2 ◆ (Sampling Techniques) FOR2060
Measuring the Forest 3 (Survey Applications) FOR3060
Harvest Practices (Fibre Harvest & Processing) FOR2070
The Forest Marketplace FOR3070
Forest Technology Applications FOR3080
Technology and Applications
Forest Ecology 1 (Ecosystem Dynamics) FOR1090
Forest Ecology 2 ◆ (Silvics & Succession) FOR3090
Forests Forever 1 (Forest Use & Protection) FOR1100
Forests Forever 2 (Management Practices) FOR2100
Silviculture (Growing the Forest) FOR3110
Users in the Forest FOR2120
Integrated Resource Management (Balancing Needs) FOR3120
Management and Conservation

——— Prerequisite ………… Recommended sequence

★ Course provides a strong foundation for further learning in this strand.
◆ Refer to specific courses for additional prerequisites.
† Course is also offered in Wildlife.

COURSE DESCRIPTIONS

Course FOR1010: Why Forestry?
Students explain the social, economic and environmental significance of forests, describe the impact of individuals on forests, and identify career opportunities in forestry.

Course FOR1020: Forest Regions of Canada
Students identify factors that determine the distribution of forests, as well as research forest regions of Canada with an emphasis on specific species and forest associations found in Alberta.

Course WLD1030: Outdoor Experiences 1 (Survival Skills)
Students demonstrate the basic skills required for responsible participation in a range of outdoor activities.

Course FOR1050: Mapping & Aerial Photos
Students interpret information from different types of maps and aerial photographs used in the forestry industry.

Course FOR1060: Measuring the Forest 1 (Measurement Skills)
Students demonstrate basic forest measurement skills, and apply these skills to sample fibre values in a forested region.

Course FOR1090: Forest Ecology 1 (Ecosystem Dynamics)
Students investigate forest ecosystems, and explain the structure and functioning of trees.

Course FOR1100: Forests Forever 1 (Forest Use & Protection)
Students describe past and present uses of Canada's forests, and explain how research and technology assist in forest management.

Course FOR2010: Making a Difference (Protection & Stewardship)
Students analyze the impact of attitudes, actions and lifestyles on forests, and propose individual and shared actions that foster environmental stewardship.

Course FOR2030: Managing Alberta Forests
Students research agencies and structures used to manage forested lands in Alberta.

Course WLD2030: Outdoor Experiences 2 (Wilderness Excursion)
Students plan, prepare for and conduct an extended outdoor wilderness trip.

Course FOR2060: Measuring the Forest 2 (Sampling Techniques)
Students research current forest inventory practices, and demonstrate appropriate strategies for sampling the fibre and nonfibre values of forests.

Course FOR2070: Harvest Practices (Fibre Harvest & Processing)
Students research the steps involved in harvesting and processing the forest fibre resource.

Course FOR2100: Forests Forever 2 (Management Practices)
Students explain Alberta's forest management goals, and describe the current management practices used to address these goals.

Course FOR2120: Users in the Forest
Students identify different forest users, and explain the planning principles used to develop an integrated resource management plan.

Course FOR3010: Issues in Forestry
Students analyze current local and global issues in forest management, and demonstrate individual and shared actions that foster environmental stewardship.

Course FOR3060: Measuring the Forest 3 (Survey Applications)
Students explain management applications of data collected from a forest survey, and examine the role of technology in current forest inventory practices.

Course FOR3070: The Forest Marketplace
Students describe the range of consumer products and services derived from Canada's forests, and research the production and marketing of these forest products.

Course FOR3080: Forest Technology Applications
Students examine research and technological applications in the forest industry, and examine changing career opportunities in the forestry sector.

Course FOR3090: Forest Ecology 2 (Silvics & Succession)
Students investigate the interrelationships among soil, water, air, trees and the environment, and explain how forests change over time as a result of these interrelationships.

Course FOR3110: Silviculture (Growing the Forest)
Students demonstrate knowledge of the techniques used to establish, grow and harvest tree crops.

Course FOR3120: Integrated Resource Management (Balancing Needs)
Students develop and present an integrated plan for sustainable development of the forest resource.

SECTION C: PLANNING FOR INSTRUCTION

CTS provides increased opportunity for junior and senior high schools to design courses based on the needs and interests of their students and the circumstances within the school and community. Some strands may be appropriately introduced at the junior high school level. Other strands are more appropriately introduced at the senior high school level or to Grade 9 students. Refer to this section for recommendations regarding the Forestry strand.

PLANNING FOR CTS

Defining Courses

Schools determine which strands and courses will be offered in a particular school, and may combine 1-credit CTS courses into multiple-credit CTS offerings.

Each 1-credit course was designed for approximately 25 hours of instruction. However, this time frame is only a guideline to facilitate planning. The CTS curricula are competency based, and the student may take more or less time to gain the designated competencies within each course.

A multiple-credit CTS offering will usually consist of 1-credit courses primarily from the same strand but, where appropriate, may include courses from other CTS strands. Refer to the *Guide to Education: ECS to Grade 12* (Appendix 1) for more information on course names and course codes.

Course selection and sequencing should consider:

- prerequisite(s)
- supporting courses (other CTS courses that may enhance the learning opportunity if offered with the course)
- course parameters:
  - instructional qualifications, if specialized
  - equipment and facility requirements, if specialized.

The course parameters are defined in Sections D, E and F of this Guide.

Degree of Flexibility

The CTS program, while designed using the modular structure to facilitate flexible timetabling and instructional delivery, does not mandate the degree of flexibility a school or teacher will offer. The teacher and school will determine the degree of flexibility available to the student. Within the instructional plan established by the school, the student may:

- be given the opportunity to progress at a rate that is personally challenging
- have increased opportunity to select the courses that develop competencies he or she finds most relevant.

Integrating Basic Competencies

The basic competencies relate to managing learning and resources, problem solving and innovation, communicating effectively, working with others and demonstrating responsibility are developed throughout the CTS program, and within each 1-credit course.

Assessment of student achievement on the basic competencies is integrated throughout the other general outcomes. Refer to Section G (Assessment Tools) of this Guide for the description of student behaviours expected at each of the four developmental stages defined for the basic competencies.

Assessment of basic competencies could include input and reflection involving the student, teacher(s), peers and others. Description of the observed behaviour could be provided through a competency profile for the course. Positive, ongoing interaction between the student and teacher will support motivation for student growth and improvement.

Assessing Student Achievement

Assessing student competency is a process of gathering information by way of observations of process, product and student interaction.

Where appropriate, assessment tools have been defined to assist the teacher and student in the assessment. Refer to Section G (Assessment Tools) of this Guide for copies of the various tools (worksheets, checklists, sample questions, etc.).

A suggested emphasis for each general outcome has also been established. The suggested emphasis provides a guideline to help teachers determine time allocation and/or the appropriate emphasis for each general outcome and the student grade.

Recognizing Student Achievement

At the high school level, successful demonstration of the exit-level competencies in a course qualifies the student for one credit. Refer to Section A of this Guide for more detailed information about how curriculum and assessment standards are defined in CTS. Refer to the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* for more information on how student achievement can be recognized and reported at the school and provincial levels.

Portfolio

When planning for instruction and assessment, consider a portfolio as an excellent tool to provide evidence of a student's effort, progress and achievement. Portfolios will aid students in identifying skills and interest. They also provide the receiving teacher, employer and/or post-secondary institution proof of a student's accomplishments. The make-up and evaluation of the portfolio should be a collaborative agreement between the student and teacher.

Resources

A comprehensive resource base, including print, software and audio-visual, has been identified to support CTS strands. It is intended that these resources form the basis of a resource centre, encouraging teachers and students to access a wide selection of resources and other information sources throughout the learning process. Unless otherwise noted, these resources are considered to be suitable for both junior and senior high school students.

Refer to Section I (Learning Resource Guide) to obtain directions for accessing up-to-date information about learning resoruces that have been identified to support the delivery of CTS courses in this strand.

Sample Student Learning Guides

In addition to the resources, Sample Student Learning Guides are available (refer to Section J of this Guide). These samples, designed for individual student or small group use, provide an instructional plan for selected courses and include the following components:

- Why take this course?
- What are the entry-level competencies?
- What are the exit-level competencies?
- What resources may be accessed?
- What assignments/activities must be completed?
- What are the timelines?
- How will the final mark be calculated?

Sample Student Learning Guides have been developed for the following courses in Forestry:

- Forest Regions of Canada
- Forest Ecology 1.

PLANNING FOR FORESTRY

The following suggestions are provided to assist teachers and school and school system administrators as they plan to deliver courses in the Forestry strand.

Selecting Courses

The scope and sequence chart in Section B provides an overview of the Forestry courses, indicating prerequisites and theme areas. Brief descriptions of each of the courses follow the scope and sequence chart in Section B.

Course planning should take into consideration course sequences that link with both physical and human resources present in the school and community. Although not required, it is recommended that FOR1010: Why Forestry? be a prerequisite/corequisite to all multiple-credit offerings in the Forestry strand.

Forestry in Junior High

The introductory level courses may be offered at the junior high level. As each school and community will vary in terms of available resources, it is important to consider potential education partners prior to selecting course sequences.

The number of courses offered will vary according to time available throughout Grades 7, 8 and 9. Individual courses may be clustered and offered within a school year or over a span of a few years. Junior high students may not complete all the learner expectations for each course that is offered.

Two sample offerings based on introductory level courses are outlined below.

Sample A: 50 hours of instruction

EMPHASIS OF COURSE CLUSTER
Introduction to Forestry
COURSES OFFERED
FOR1010 Why Forestry? FOR1020 Forest Regions of Canada
RATIONALE/KEY LEARNINGS
Students examine the economic, environmental and social significance of forests, describe the impact of individuals on forests, and conduct research on forest regions of Canada. This CTS offering complements the junior high science and social studies programs, and can be linked with other CTS strands including Tourism and Wildlife.

Sample B: 75 hours of instruction

EMPHASIS OF COURSE CLUSTER
Personal/Recreational Use of Forests
COURSES OFFERED
FOR1090 Forest Ecology 1 WLD1030 Outdoor Experiences 1 FOR2010 Making a Difference
RATIONALE/KEY LEARNINGS
Students investigate the structure and functioning of forest ecosystems, develop basic skills required for responsible participation in a range of outdoor forest activities, and propose individual and shared actions that foster environmental stewardship. This CTS offering complements the junior high core science program and complementary Environmental and Outdoor Education program, and can be linked with other CTS strands including Tourism and Wildlife.

Where appropriate, junior high school students may also take intermediate level courses, particularly in the Technology and Applications theme.

Forestry in Senior High

All introductory, intermediate and advanced level courses may be offered to senior high students. Three sample multiple-credit CTS offerings, based on intermediate and advanced level courses and designed to be delivered to senior high school students, are outlined below.

Sample C: 75 hours of instruction

EMPHASIS OF MULTIPLE-CREDIT OFFERING
Forest Inventory (assuming junior high background)
1-CREDIT COURSES OFFERED
FOR2060 Measuring the Forest 2 FOR3060 Measuring the Forest 3 FOR3080 Forest Technology Applications
RATIONALE/KEY LEARNINGS
Students demonstrate appropriate strategies for sampling fibre and non-fibre values of the forest, explain management applications of data collected from a forest survey, and research applications of technology in forest inventory practices. This multiple-credit offering can be linked with other CTS strands including Agriculture, Career Transitions, Information Processing, Tourism and Wildlife.

Sample D: 100 hours of instruction

EMPHASIS OF MULTIPLE-CREDIT OFFERING
Silviculture and Forest Harvest (assuming junior high background)
1-CREDIT COURSES OFFERED
FOR3090 Forest Ecology 2 FOR3110 Silviculture FOR2070 Harvest Practices FOR3070 The Forest Marketplace
RATIONALE/KEY LEARNINGS
Students investigate relationships among soil, water, air, trees and the environment, demonstrate techniques in establishing, growing, harvesting and processing tree crops, and research the production and marketing of forest products in Canada. This multiple-credit offering can be linked with other CTS strands including Career Transitions, Management and Marketing, Mechanics and Wildlife.

Sample E: 125 hours of instruction

EMPHASIS OF MULTIPLE-CREDIT OFFERING
Forest Management (assuming junior high background)
1-CREDIT COURSES OFFERED
FOR2030 Managing Alberta Forests FOR2100 Forests Forever 2 FOR2120 Users in the Forest FOR3010 Issues in Forestry FOR3120 Integrated Resource Management
RATIONALE/KEY LEARNINGS
Students research the goals of forest management, and agencies/frameworks used to manage forested lands in Alberta. They focus attention on different users in the forest, the planning principles involved in integrated resource management, and individual/shared actions that foster environmental stewardship. This multiple-credit offering can be linked with other CTS strands including Agriculture, Career Transitions, Energy and Mines, Legal Studies, Tourism and Wildlife.

Courses could also be clustered into multiple-credit offerings that develop competencies relevant to career opportunities within a specific industry.

Organizing for Learning

A "learn by doing" approach is recommended for the Forestry strand. Essentially, the teacher's role becomes that of guide and partner in the learning process. The "learn by doing" approach requires the teacher to be facilitator and coach, rather than subject-based expert, as students actively participate in learning by doing and discovering.

Small group instruction is a good way to foster learning by doing and discovering. Small groups enable students to be active participants in learning, and develop independent and responsible learning habits. As students work in small group situations they will share information, solve problems, develop consensus, and help each other learn content and processes.

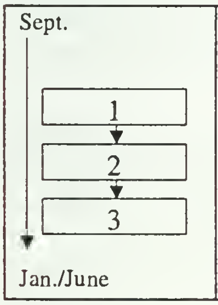
The community has a key role in education and can be an effective partner in the learning process. The use of community members and resources should be integrated into course planning. Business, industry, post-secondary and government agencies offer a wide range of services and resources, as do local clubs, service groups and institutions. When planning for the use of community resources, teachers should ensure that related presentations and/or activities:

- are consistent with student knowledge and skill levels
- demonstrate sound pedagogy
- are exemplary of approved health and safety standards
- provide a balanced approach to curriculum topics and related issues.

Before selecting courses, teachers should refer to the course parameters outlined in Sections D, E and F of this Guide.

Individual 1-credit courses can be delivered sequentially, concurrently or combined. For example, although the courses in the Technology and Applications theme are sequential, they can be combined with courses from the Social and Cultural Perspectives theme or the Management and Conservation theme.

Scenario A



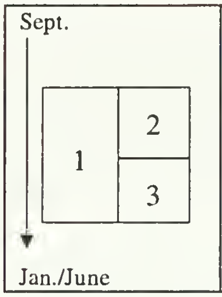
Courses may be taught sequentially, e.g.:

Measuring the Forest 1

↓

Measuring the Forest 2

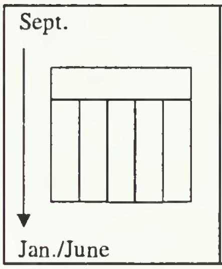
Scenario B



One course, such as Forest Regions of Canada, may be taught throughout the term (e.g., 20 minutes per class) in conjunction with two other courses.

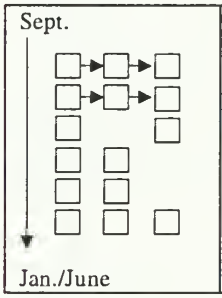
Teachers can also allow students to progress at a rate that is personally challenging; e.g.:

Scenario C



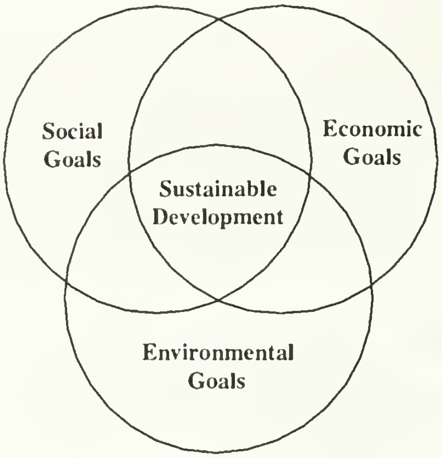
All students take one or two common courses together, then are able to select other courses from a menu of courses made available to them.

Scenario D



From a list of courses identified by the teacher, the students select which ones they will work on and, in consultation with the teacher, establish timelines for completion and submission of assignments, etc.

Plans for learning must address social, environmental and economic perspectives related to sustainable forest management and provide opportunities for students to become involved in learning experiences that reflect a broad understanding of issues related to forest use. Presentations of course content that reflect a singular or narrow view of social, economic or environmental concerns are not consistent with learner expectations and must be avoided.



As in all CTS strands, students will identify, explore and prepare for future career opportunities. It is recommended that instructional planning include the integration of relevant career investigations throughout each course, rather than as a singular or isolated study. Career profiles, interviews and job shadowing will acquaint students with the many technical and professional careers associated with the forest industry.

Instructional Qualifications

Responsibility for instructional planning and assessment of courses in Forestry will be assumed by Alberta certified teachers. A background in science and/or forest industry will be an asset to those who provide instruction in Forestry courses, particularly at the intermediate and advanced levels. Teachers may find it desirable to access sources of instructional support available from forest industry, professional forestry associations and consultants, and relevant government agencies (e.g., Alberta Environmental Protection).

To ensure compliance with safety and industry standards, some courses require that components of instruction be provided by person(s) having additional credentials granted by industry, government or community organizations. Forestry courses requiring additional instructor qualifications are identified in the following chart.

COURSE	ADDITIONAL INSTRUCTOR QUALIFICATIONS	
	Required	**Recommended**
WLD1030: Outdoor Experiences 1	Standard Level First Aid Certificate	First Aid in the Wilderness Certificate
FOR1060: Measuring the Forest 1	Standard Level First Aid Certificate	
WLD2030: Outdoor Experiences 2	Standard Level First Aid Certificate	First Aid in the Wilderness Certificate
FOR2060: Measuring the Forest 2	Standard Level First Aid Certificate	
FOR3090: Forest Ecology 2	Standard Level First Aid Certificate	

Refer to the corresponding course in Section D, E or F of this Guide for further information regarding each instructor qualification. In some instances it may be desirable to have other qualified individuals in the community work with the teacher in delivering courses (or parts thereof) that require additional instructor qualifications.

Sensitive Issues

Some Forestry courses contain topics of a sensitive nature. Teachers will need to be respectful of family and community values in selecting appropriate courses to offer in Forestry. For example, courses that reference the consumptive use of forests and examine different methods of forest harvest (i.e., FOR2070, FOR3070) may be sensitive in some communities.

Ethical issues surrounding the sustainable management of forests may also be sensitive for some students (i.e., FOR1100, FOR2100, FOR2120, FOR3010). Emphasis should be placed on a "process" for conflict analysis and not on particular positions that may be expressed.

For further clarification of provincial policy on sensitive issues, refer to the *Policy, Regulations and Forms Manual* (Controversial Issues in Education, Policy 1.7.1). Teachers and administrators should also review jurisdictional policies related to sensitive issues.

Health, Safety and Related Legislation

Facilities used to support a Forestry program must ensure a safe learning/working environment. Students must be aware of federal, provincial and local regulations governing the tasks they perform, and establish appropriate personal and environmental health and safety procedures for courses that involve:

- the use of specialized hand/power equipment
- the handling and storage of hazardous materials
- outdoor trips and field-based investigation.

Students must understand immediate and potential hazards associated with the tasks they perform, and the possible impact of these hazards on self, others and the environment.

Of particular significance from the perspective of health and safety are courses that involve outdoor trips in forest environments (e.g., WLD1030, WLD2030). These courses require that both student and instructor have prior knowledge of survival techniques and are able to provide first aid in remote locations.

For additional information on health and safety standards, refer to the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* (Appendix 3).

Addressing Safety in Off-Campus Excursions

Outdoor trips and field-based investigations are recommended and should be an important part of teaching and learning throughout the Forestry strand. Safety must be a prime consideration in planning off-campus learning experiences. Both teachers and students should engage in activities commensurate with their level of training and ability. Adequate instructional support, guidance and supervision must be provided at all times. Local jurisdiction and school policies must be understood by principals, teachers, parents, supervisors and students.

Preparation and Risk Anticipation

The preparation stage is an important part of any off-campus learning experience. At this stage of planning, potential risks can be anticipated and either avoided or moderated. The preparation stage should focus attention on:

- trip administration, including the use of parental permission forms, health information forms, school/system authorization forms and accident report forms as required
- a review of laws and regulations relevant to the learning site and activities that will be undertaken
- assessment of the learning site in terms of potential hazards and risks that may be present
- group size and the level of supervision that will be required (i.e., supervisor/student ratio)
- a briefing of parents, school administrators, government/industry authorities or others who should be informed regarding itineraries, participants and emergency response plans
- pre-trip logistics, including transportation, equipment, facility and departure date/time considerations
- student preparation, including the development of background knowledge/ experience and training in specific skill areas.

On-Site Risk Management

Safety and risk management involves exercising situation-specific judgement throughout the course of off-campus learning. Judgement is the product of experience, and may include recognizing factors such as dangers imposed by equipment or animals, deteriorating weather, a decline in physical strength, or a more challenging task. Many of the hazard recognition skills can be taught in the classroom in the preparation stage.

A significant aspect of on-site risk management is group management. Teachers can exercise appropriate group management strategies by focusing attention on:

- pacing, including speed of travel, rest stops, distance travelled and fitness level of students
- maintaining a safe distance for observations

- group control, including position of leader, signal systems and buddy systems
- the establishment of group rules and norms
- clearly defined task allocations for each student
- objective hazard recognition in the field, including machinery and equipment, weather, terrain, flora and fauna
- subjective hazard recognition in the field, including level of group energy and level of cooperation.

Emergency Response

If students have been well prepared for field-based learning experiences and appropriate group management strategies exercised, the teacher will have maximized opportunities for effective response to an emergency situation. An effective emergency response action plan should include consideration of:

- a suitable approach to the accident site
- first-aid supplies and techniques
- a strategy for signalling assistance
- an evacuation plan
- group management throughout the emergency situation.

Identifying Linkages

Section H of this Guide describes linkages within CTS and with core and complementary programs.

In particular, teachers should be aware of the linkages of Forestry with biology components in the junior and senior high science program, and also with environmental components in the junior high Environmental and Outdoor Education Program. The Forestry strand is designed to reinforce, extend and apply related learnings in these courses. Collaborative planning at the school level will ensure meaningful learning experiences through effective integration of these courses.

The Career Transitions strand of CTS provides project, practicum, safety and leadership courses that may be combined with courses in Forestry to increase opportunity for students to develop expertise, refine their competencies and/or obtain credentials.

Using "Project" Courses

Students may use one or more of the 10 project courses to expand learning beyond the competencies outlined in particular Forestry courses. For example, a silviculture or forest inventory project may require more than the 25, 50 or 75 hours available through courses by that name. In these instances, project courses from the Career Transitions strand may be accessed so as to provide sufficient time for completion of learning and the task. For each project course, the teacher and student establish specific learning outcomes, assessment criteria, resources and timelines.

Using "Practicum" Courses

Students may use one or more of the four practicum courses to extend the competencies developed in particular Forestry courses in order to attain a recognized credential offered by an agency external to the school. For example, students who plan to work in the forest industry may wish to access a practicum course from the Career Transitions strand in order to obtain a "Bear Awareness and Avoidance" certificate. Practicum courses must be supervised by both a qualified teacher and an experienced professional authorized to supervise trainees for the credential.

Project and practicum courses are **not** designed to be offered as isolated courses and should **not** be used to extend Work Experience 15, 25 and 35 courses.

Improving Smooth Transitions to the Workplace and/or Post-secondary Programs

Refer to Section H of this Guide for potential transitions students may make into:

- the workplace
- related post-secondary programs or other avenues for further learning.

COURSE CURRICULUM AND ASSESSMENT STANDARDS:

SECTION D: INTRODUCTORY LEVEL

The following pages define the curriculum and assessment standards for the introductory level of Forestry.

Introductory level courses help students build daily living skills and form the basis for further learning. Introductory courses are developed for students who have no previous experience in the strand.

General outcomes define the competencies a student must demonstrate to achieve success in a course. Assessment standards define the criteria and conditions to be used for assessing the competencies defined in the general outcomes.

Specific outcomes provide a detailed framework for instruction to help students build the competencies defined in the general outcomes. Additional information and suggestions for instruction are provided in the Notes column; teachers may wish to use this space to record their ideas for instruction or student projects.

Course FOR1010: Why Forestry? D.3
Course FOR1020: Forest Regions of Canada D.7
Course WLD1030: Outdoor Experiences 1 (Survival Skills) D.11
Course FOR1050: Mapping & Aerial Photos D.17
Course FOR1060: Measuring the Forest 1 (Measurement Skills) D.23
Course FOR1090: Forest Ecology 1 (Ecosystem Dynamics) D.27
Course FOR1100: Forests Forever 1 (Forest Use & Protection) D.31

COURSE WLD1030: OUTDOOR EXPERIENCES 1 (SURVIVAL SKILLS)

Level: Introductory

Theme: Social and Cultural Perspectives

Prerequisite: Emergency First Aid (current certification)

Description: Students demonstrate the basic skills required for responsible participation in a range of outdoor activities.

Parameters: Access to an outdoor wilderness environment (e.g., one of Alberta's six natural regions) and gear for outdoor expeditions.

Instructor training (current certification) in Standard Level First Aid is required; instructor training in First Aid in the Wilderness is recommended.

Teachers may find it desirable to access the services of a qualified Outdoor Guide in delivering components of this course.

Off-campus learning activities must be commensurate with previous levels of wilderness training and experience; day trips should precede extended overnight trips; experience in hardcover camping should precede potential softcover camping and/or emergency shelter camping opportunities.

Note: Specific outcomes in Outdoor Experiences 1 and 2 link with the *National Occupational Standards for Outdoor Guide* (Alberta Tourism Education Council), and address core skills in Environmental Awareness, Camp and/or Trip Operation, Safety and Survival.

See Section C (Planning for Instruction) and Section H (Linkages/Transitions) of this Guide for further information on instructor training/certification and linkages.

Supporting Course: CTR1210 Personal Safety (Management)

Because of the practical nature of this course, students must have a general knowledge of basic first-aid and survival techniques relevant to wilderness environments. See Planning for Instruction in Section C for further information on student safety.

Note: WLD1030 and WLD2030 (Outdoor Experiences 1 and 2) provide opportunities for wilderness interaction at a personal level. This course sequence should place emphasis on developing skills that will enable students to safely observe and appreciate wildlife and habitat within one or more of Alberta's six natural regions.

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• demonstrate knowledge and skills necessary for responsible outdoor experiences	• a teacher-prepared assessment in which the student demonstrates knowledge of "Safety," "Survival" and "Environmental Impact" as outlined in the *National Occupational Standards for Outdoor Guide.* Assessment to address: – safety guidelines – survival techniques – ecotourism and carrying capacity. *Assessment Tool* *Sample Assessment Items: Outdoor Experiences 1, WLD1030–1* *Standard* *Response indicating 80% mastery*	20
• conduct safe outdoor activities that have minimal environmental impact	• within a continuous timeframe of 20 or more hours, and through access to an outdoor environment, conducting safe outdoor activities that have minimal impact on the environment. The student will demonstrate appropriate procedures for: – travel in outdoor environments – observation of flora and fauna – minimum impact/no-trace land use – setting up emergency shelter – signalling for help. *Assessment Tool* *Task Checklist: Outdoor Experiences 1, WLD1030-2* *Lab Assessment: Outdoor Forest Experiences, FORLAB* *Standard* *Achieve a performance rating of 2 in task assessment and lab assessment*	80

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:* • maintaining a log/journal of outdoor experiences that provides summative reflection on: – individual and group preparedness, cooperation and responsibility – observations of wildlife and habitat – environmental ethics. *Assessment Tool* *Reflection Guide for Outdoor Experiences, FORREF–OUT* *Standard* *Complete five log/journal entries; address criteria for reflection to a standard of 1 on the rating scale*	
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tools* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Outcomes	Notes
	The student should:	
Wilderness Experience	• identify, assess, avoid and/or respond to physical hazards that may be imposed by the natural environment; e.g.: – particular terrain and conditions, including avalanche, rock slides, lake and river ice, and bush travel – wildlife that may be encountered, including bears, bees, ticks, nonedible plants, snakes – changes in weather conditions that may affect personal and group safety • identify, assess, avoid and/or respond to physiological and psychological factors often associated with outdoor experiences; e.g., – dealing with hypothermia, frostbite, dehydration and heat stroke – understanding fatigue and when not to move – coping with adversities, such as getting lost or hurt	**Student safety must be a prime consideration in selecting learning activities within this course. Activities must be consistent with student knowledge and skill levels.** Investigate hazards pertinent to a particular activity. View films and slide shows of outdoor activities that involve physical hazards. Invite guest speakers to present information and advice on expeditions.

Concept	Specific Outcomes	Notes
	The student should:	
Wilderness Experience (continued)	• list and explain necessary steps to take in emergency and survival situations in the outdoors; e.g.: – what to do if lost or separated from the group – first aid and emergency response to injury – construction of emergency shelters – how to gather food from edible plants – en route organizational strategies, including lead and sweep, regrouping procedures, pacing	Engage students in simulation activities, role playing and case studies. Review basic first aid and immerse students in emergency response situations.
	• select appropriate personal and group gear for outdoor activities; e.g.: – personal gear, with consideration to maintaining body temperature and protection from injury – group gear, to meet requirements for food, shelter, travel and emergencies	Have students present a "fashion show" or produce a video that demonstrates appropriate equipment and its use.
	• demonstrate safe use and appropriate care of outdoor hand tools, including knives, axes and saws	Conduct maintenance clinic.
	• demonstrate safe procedures for building and using outdoor fires; e.g.: – signalling – warming – cooking	Demonstrate techniques — then plan and carry out a schoolyard "cookout."
	• explain techniques used to plan, pack, carry and prepare foods during outdoor expeditions; e.g.: – nutritional requirements – portability and preservation factors – food preparation techniques – safe use of campfires	Involve students in menu planning for a hypothetical or proposed field trip.
	• explain techniques that can be used to maintain hygiene during outdoor expeditions; e.g.: – water purification systems – food storage – personal health	Invite guest speakers from a health department or from national/provincial parks.

COURSE WLD1030: OUTDOOR EXPERIENCES 1 (SURVIVAL SKILLS) (continued)

Concept	Specific Outcomes	Notes
	The student should:	
Wilderness Experience (continued)	• explain techniques for minimum impact/no-trace land use; e.g.: – guidelines for camping, controlling garbage, using water supply, using open fires and disposing of human waste – protection of flora and fauna.	Discuss principles of "ecotourism." Consider carrying capacity of a local area in relation to minimum environmental impact. Cite examples of careers in tourism (e.g., outdoor guide, fishing guide) that promote minimum impact land use.
Outdoor Travel	• plan and conduct safe outdoor expeditions in the natural environment; e.g.: – research information from a variety of sources, including maps, aerial photographs, guidebooks, journals and local experts – interpret route information by selecting reasonable destinations, estimating travel time and anticipating obstacles – apply knowledge and skills while en route, including map reading and compass skills, knowledge of terrain and route selection, and mapping of key landmarks and directions	Examine maps, research books and reference materials on particular field sites to be visited. Assess alternative routes with regard to time and preparation required for each. Conduct map reading and basic orienteering exercises in school yard.
	• use appropriate modes of travel to safely participate in outdoor activities; e.g.: – hiking/backpacking – cross-country skiing – snowshoeing – canoeing	Plan and implement a sequence of skill development activities with a follow-up excursion.
	• demonstrate safe and unobtrusive techniques to examine wildlife and habitat; e.g.: – plant/animal identification – wildlife hazards – animal tracks and scat – animal behaviour/social patterns	Develop appropriate observation techniques; practise observing students in a library, animals in the zoo, etc. Reference the activities and suggestions provided in *The Art of Seeing and Tracking*. Make plaster casts of animal tracks. Examine furs, skulls, bones, nests, etc.

Concept	Specific Outcomes	Notes
Outdoor Travel (continued)	*The student should:* • demonstrate minimum impact/no-trace land use while participating in outdoor expeditions; e.g.: – proper trail use, including the avoidance of trail widening – campsite care, including the use of fires and stoves, tent site selection and firewood selection – waste disposal techniques, including latrines, waste water disposal and garbage.	Observe human impacts on a wilderness area. Set up a model campsite in the school yard or a local park; practise minimum impact/ no-trace land use.

COURSE CURRICULUM AND ASSESSMENT STANDARDS:

SECTION E: INTERMEDIATE LEVEL

The following pages define the curriculum and assessment standards for the intermediate level of Forestry.

> Intermediate level courses help students build on the competencies developed at the introductory level and focus on developing more complex competencies. They provide a broader perspective, helping students recognize the wide range of related career opportunities available within the strand.

Course FOR2010: Making a Difference (Protection & Stewardship) E.3
Course FOR2030: Managing Alberta Forests E.9
Course WLD2030: Outdoor Experiences 2 (Wilderness Excursion) E.15
Course FOR2060: Measuring the Forest 2 (Sampling Techniques) E.21
Course FOR2070: Harvest Practices (Fibre Harvest & Processing) E.25
Course FOR2100: Forests Forever 2 (Management Practices) E.31
Course FOR2120: Users in the Forest E.35

COURSE WLD2030: OUTDOOR EXPERIENCES 2 (WILDERNESS EXCURSION)

Level: Intermediate

Theme: Social and Cultural Perspectives

Prerequisites: WLD1030 Outdoor Experiences 1 (Survival Skills)
Emergency First Aid (current certification)

Description: Students plan, prepare for and conduct an extended outdoor wilderness trip.

Parameters: Access to an outdoor wilderness environment and gear for outdoor expeditions.

Instructor training (current certification) in Standard Level First Aid is required; instructor training in First Aid in the Wilderness is recommended.

Teachers may find it desirable to access the services of a qualified Outdoor Guide in delivering components of this course.

Off-campus learning activities must be commensurate with previous levels of wilderness training and experience; day trips should precede extended overnight trips; experience in hardcover camping should precede potential softcover camping and/or emergency shelter camping opportunities.

Note: Specific outcomes in Outdoor Experiences 1 and 2 link with the *National Occupational Standards for Outdoor Guide* (Alberta Tourism Education Council), and address core skills in Environmental Awareness, Camp and/or Trip Operation, Safety and Survival.

See Section C (Planning for Instruction) and Section H (Linkages/Transitions) of this Guide for further information on instructor training/certification and linkages.

Supporting Course: CTR1210 Personal Safety (Management) [Career Transitions Strand]

Because of the practical nature of this course, students must have a general knowledge of basic first-aid and survival techniques relevant to wilderness environments. See Planning for Instruction in Section C for further information on student safety.

Note: WLD1030 and WLD2030 (Outdoor Experiences 1 and 2) provide opportunities for wilderness interaction at a personal level. This course sequence should place emphasis on developing skills that will enable students to safely observe and appreciate wildlife and habitat within one or more of Alberta's six natural regions.

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• present a plan for an extended outdoor wilderness trip	• developing and presenting collaborative group plans for an extended outdoor wilderness trip as outlined in the *National Occupational Standards for Outdoor Guide* (see Camp and/or Trip Operation: Prepare for Trips). Group plans to address: – pre-trip planning and logistics – equipment and supply requirements – organization of personal gear. *Assessment Tools* National Occupational Standards for Outdoor Guide *Task Checklist: Outdoor Experiences 2, WLD2030–1* *Standard* *Complete each component of trip planning to a standard of 2 on the rating scale*	20
• conduct and conclude, safely, an extended outdoor wilderness trip with minimal environmental impact	• within a continuous timeframe of at least 72 hours, and through access to an outdoor environment, conduct and conclude the trip as outlined in the *National Occupational Standards for Outdoor Guide* (see Camp and/or Trip Operation: Conduct Trips, Legal Issues: Comply With Legislation and Environmental Awareness: Minimize Impact). The student will demonstrate procedures for: – setting up camp – preparing meals – ensuring safety and survival of self and others – complying with pertinent legislation – breaking camp – ensuring least possible environmental impact. *Assessment Tools* National Occupational Standards for Outdoor Guide *Task Checklist: Outdoor Experiences 2, WLD2030–1* *Standard* *Conduct and conclude the trip to a standard of 2 on the rating scale*	80

COURSE WLD2030: OUTDOOR EXPERIENCES 2 (WILDERNESS EXCURSION) (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:* • successfully participating in activities while en route that involve personal interaction with the wilderness environment. *Assessment Tool* *Task Checklist: Outdoor Experiences 2, WLD2030–1* *Standard* *Complete four of the activities (as outlined in the task checklist) that involve personal interaction with the wilderness environment to a standard of 2 on the rating scale* • a post-trip assessment that provides observations and personal impressions, and summarizes: – activities well done – problems encountered and suggested solutions – recommendations regarding future trips. *Assessment Tool* *Post-Trip Assessment for Outdoor Experiences 2, WLD2030–2* *Standard* *Achieve a performance rating of 2 in applicable areas of post-trip assessment*	
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction throughout the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

COURSE WLD2030: OUTDOOR EXPERIENCES 2 (WILDERNESS EXCURSION) (continued)

Concept	Specific Outcomes	Notes
	The student should:	
Trip Planning and Preparation	• establish specific objectives for an outdoor wilderness trip; e.g.: – goals and expectations – length of trip – destination – general schedule and agenda	Hold a pre-trip meeting with students and their parents/guardians prior to the excursion to confirm trip details. Obtain information regarding special needs (e.g., physical limitations, special dietary requirements). Discuss trip expectations.
	• incorporate guidelines for environmental awareness into trip planning and preparation; e.g.: – principles of ecotourism – consideration for carrying capacity of the area – strategies for minimum impact land use	Obtain *Travel Alberta's Adventure Guide* (published annually) for a list of outfitters/guides available throughout the province. List potential environmental impacts that may result from the trip. Write before and after journal entries to document impact on a campsite.
	• identify and obtain appropriate supplies, equipment and personal gear for the trip; e.g.: – water and food – tents, stoves, axe – first-aid and survival kits – clothing and foot wear – toiletries	List all supplies and equipment to be taken on the trip. Identify items that may have significant environmental impact—note considerations for use or alternatives that would lessen impact.
	• devise plan for weather and seasonal conditions; e.g.: – identify hazards particular to the area – listen to weather and news reports and forecasts	Establish methods of regular and emergency communication, and a contingency plan to be used if regular communication is interrupted.
	• conduct a pre-trip assessment of supplies, equipment and personal gear; e.g.: – compare to trip checklist – assess quality, quantity and condition – assess relative to weather and seasonal conditions – obtain missing and/or specialty items	Compare supplies to checklist. Ensure all equipment is in satisfactory working condition. Pack supplies/equipment in waterproof containers.

COURSE WLD2030: OUTDOOR EXPERIENCES 2 (WILDERNESS EXCURSION) (continued)

Concept	Specific Outcomes	Notes
Trip Planning and Preparation (continued)	*The student should:* • prepare supplies, equipment and personal gear for transportation • devise plan for courses of action to cope with potential emergency situations in the wilderness; e.g.: – extreme weather conditions – fire or flood – injury and illness.	Potential linkages exist with the "First Aid in the Wilderness" certificate course (see Section H: Transitions/Linkages). Outline requirements for survival and first-aid kits.
Conducting and Concluding the Trip	• follow guidelines for safe outdoor travel; e.g.: – inform responsible person of travel plans – follow travel schedule as planned – use orientation and navigational skills – identify potential hazards and take necessary precautions – dress according to mode of travel, weather and season – watch for changes in weather conditions	Be aware of hazards particular to the area. Listen to weather and news reports. Carry survival equipment. Reroute, postpone or cancel trip if conditions threaten safety.
	• set up a wilderness camp site, following guidelines for comfort, safety and least possible environmental impact; e.g.: – select camp site considering: • site exposure and drainage • access to water and firewood • impact on flora and fauna • proximity to potential dangers – erect tent or lean-to – assemble other amenities – protect food from wildlife and spoilage – protect equipment from the elements	Select dry, level ground. Consider potential hazards, including fire, rock slides, avalanches, dead materials close to shelter.
	• follow minimal impact guidelines in establishing: – latrine location and toilet procedures – wash area and procedures – fire site and use – methods of garbage and waste water disposal	Dig deep hole for toilet pit. Provide soil and environmentally friendly substance to decrease odour and speed decomposition. Use biodegradable soap.
	• comply with local, provincial and federal legislation relevant to activities that are undertaken	Consider land use, permits, seasonal restrictions, quotas, etc. Seek clarification if necessary. Report violations.

Concept	Specific Outcomes	Notes
	The student should:	
Conducting and Concluding the Trip (continued)	• assume outdoor camp duties on a rotational basis; e.g.: – meal preparation – camp maintenance and hygiene	Have students participate in all areas of preparation, operation and clean-up. Alternate chores during trip.
	• demonstrate practical knowledge and skills in at least three areas relevant to wilderness interaction; e.g.: – plant or animal identification – animal track and scat identification – use of equipment – survival skills	Reference the activities and suggestions provided in *The Art of Seeing and Tracking*. Make plaster casts of animal tracks; examine fur, skulls, bones, nests, etc.
	• monitor the activities of wildlife in the area and take precautions to avoid dangerous situations; e.g.: – observe animal behaviours – observe social patterns/relationships – identify wildlife hazards	Dispose of garbage properly. Store food safely. Maintain safe distance from wildlife.
	• describe evidence of human impact on flora, fauna and/or natural habitat	
	• follow appropriate procedures to break camp; e.g.: – pack supplies, equipment and personal gear – take down shelter – clean site	Do circle tour of camp—look for garbage and misplaced equipment.
	• conclude the wilderness trip and conduct a post-trip assessment; e.g.: – observations and personal impressions – problems encountered – recommendations regarding future trips.	Develop a slide/tape presentation based on the outdoor trip. Consider: • satisfaction with equipment and supplies • suitability of environment or route • inconsistencies between trip and expectations.

COURSE FOR2060: MEASURING THE FOREST 2 (SAMPLING TECHNIQUES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: FOR1060 Measuring the Forest 1 (Measurement Skills)
Emergency First Aid (current certification)

Course Description: Students research current forest inventory practices, and demonstrate appropriate strategies for sampling the fibre and nonfibre values of forests.

Course Parameters: Access to a demonstration forest and forest measurement tools.

Instructor training (current certification) in Standard Level First Aid is required.

See Section C (Planning for Instruction) and Section H (Linkages/Transitions) for further information on instructor training and certification.

Support Course: CTR1210 Personal Safety (Management) [Career Transitions Strand]

Because of the practical nature of this course, students must have a general knowledge of basic first-aid and survival techniques relevant to forest environments. See Planning for Instruction in Section C for further information on student safety.

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • describe random and systematic sampling techniques for gathering information about the forest resource	*Assessment of student achievement should be based on:* • completing a research project on random and systematic sampling techniques and their application in gathering data about fibre and nonfibre forest values. Research to address problems related to bias, error, and the use of sample data in estimating forest populations. *Assessment Tool* *Research Process: Random and Systematic Sampling Techniques, FOR2060–1* *Standard* *Complete all components of research to a standard of 2 on the rating scale*	20

COURSE FOR2060: MEASURING THE FOREST 2 (SAMPLING TECHNIQUE) (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• gather sample data regarding fibre and nonfibre values in a forested region	• designing a sampling technique (transect and plot) for gathering information about a specific fibre and nonfibre resource (e.g., trees, rabbits, soil, grass, insects). Design to address: – goals/outcomes for the forest survey – type and amount of data to be collected – suitable sampling techniques – boundary for sample area – a data collection sheet. *Assessment Tool* *Task Checklist: Sampling Fibre and Nonfibre Forest Values, FOR2060–2* *Standard* *Design the sampling technique(as outlined in the task checklist) to a standard of 2 on the rating scale*	30
	• collecting and recording sample data on a representative forested area, and compiling sample data in order to estimate the fibre and nonfibre resource within the forested area. Fibre data sampling to involve transects and plots, and to be accurate within 10%. *Assessment Tool* *Task Checklist: Sampling Fibre and Nonfibre Forest Values, FOR2060–2* *Sample Data Sheet: Fibre and Nonfibre Forest Values, FOR2060–3* *Lab Assessment: Outdoor Forest Experiences, FORLAB* *Standard* *Collect, record and compile sample data (as outlined in the task checklist and lab assessment) to a standard of 2 on the rating scale*	40

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LAB ASSESSMENT: Outdoor Forest Experiences FORLAB

Student Name: ______________________

Course(s):	WLD1030	FOR1050	FOR1060	WLD2030	FOR2060	FOR3110
ACTIVITY/ TASK:						
DATE:						
Management	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Teamwork	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Equipment and Materials	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Environmental Ethics	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not Applicable

ASSESSMENT CRITERIA

The student:

Management

☐ prepares self for task
☐ organizes and works in an orderly manner
☐ interprets and carries out instructions accurately
☐ plans and uses time in a logical sequence
☐ attempts to solve problems prior to requesting help
☐ ______________________
☐ ______________________

Teamwork

☐ cooperates with group members
☐ shares tasks/tools appropriately among peers
☐ negotiates solutions to problems
☐ displays effective communication skills
☐ ______________________
☐ ______________________

Equipment and Materials

☐ selects appropriate equipment and materials
☐ handle/uses equipment and materials safely
☐ demonstrates concern for safe procedures/techniques
☐ cleans/maintains/stores equipment in a safe manner
☐ keeps work/study environment clean and organized
☐ advises of immediate hazards and necessary repairs
☐ ______________________
☐ ______________________

Environmental Ethics

☐ protects flora and fauna
☐ chooses environmentally friendly materials
☐ minimizes generation of waste materials
☐ follows accepted practices for disposing of wastes
☐ protects/manages water supply
☐ ______________________
☐ ______________________

RATING	ASSESSMENT CRITERIA
	The student:
4 3 2 1 0	**Preparation and Planning** ☐ identifies a specific issue regarding the forest environment ☐ talks to others in order to clarify ideas ☐ accesses basic in-school/community resources regarding the issue ☐ identifies appropriate individuals/agencies to contact ☐ establishes a position on the issue ☐ ____________
4 3 2 1 0	**Writing the Letter** ☐ clearly states a position on the issue and a rationale for adopting that position ☐ considers the implications of various approaches for dealing with the issue ☐ cites references to support information/views ☐ maintains an appropriate tone of communication ☐ requests a response to the letter ☐ uses correct grammatical and technical conventions ☐ demonstrates proofreading and editing skills ☐ ____________
4 3 2 1 0	**Critiquing the Response** ☐ identifies important elements of the response: – acknowledgement of support or concern – statement of position and rationale – reference to supporting information/views – comments regarding future options/alternatives ☐ assesses quality of the response based on: – logical development of ideas – quality/quantity of supporting information and views – tone of communication ☐ suggests possible improvements to the response and original letter ☐ ____________

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not Applicable

REFLECTIONS/COMMENTS

MUSEUM CONSERVATION RULES FOR LEAF/TWIG COLLECTION

FOR1020–3

ASSESSMENT CRITERIA Each specimen in the collection to be assessed according to the following criteria:	RATING SCALE 0	1	2	3
1. Completeness • specimen must include typical needles/leaves, twig and terminal bud • cone, fruit or seed to be included where feasible • minimum size of specimen is 15 cm in length	Atypical foliage		All components present	All components present
	No twig or bud	No twig or bud	Size at minimum	Size above minimum
		Sample too small		
	No cone or fruit	No cone or fruit	No cone or fruit	Cone/fruit included
2. Pressing: • specimen to be flattened so that the undersides of some needles/leaves face upward • no folding or bending of tissue to be evident.	Foliage not flat	Foliage flat	Foliage flat	Foliage Flat
	Underside of foliage not visible	Underside of foliage not visible	Underside of some foliage faces upward	Underside of some foliage faces upward
	Substantial folding of tissue	Significant folding of tissue	Minor folding of tissue	All tissue laying flat
3. Mounting: • dried specimens are attached to Bristol board with white glue or Gum Arabic • conifers may be placed in Ryker mounts • specimen must occupy central position on mounting sheet (or in Ryker mount) • orientation vertical or at 45° to vertical (terminal bud to top).	Scotch tape	White glue	White glue	White glue
	Horizontal or downward orientation	Horizontal or downward orientation	Vertical or upward orientation	Vertical or upward orientation
	Smears evident	Minor smears or excess glue	Excess/insufficient glue used	Sheet clear of smears, excess glue
4. Labelling: family name scientific name common name geographic location where collected habitat name of collector date of collection	Incomplete information	Habitat or location missing	Complete information	Complete information
	Incorrect sequence for more than 2 items	1-2 items out of sequence	1-2 items out of sequence	Correct sequence
5. Identification: • must include common name, as well as species, genus and family names.	More than 2 categories incorrect (family, genus, species, common name)	2 of 4 categories wrong	Correct to genus only	Correct to species

STANDARD IS 2 FOR EACH SPECIMEN IN THE COLLECTION

Safety Guidelines

1. For each of the following outdoor situations, clearly describe the primary hazard(s) you would expect to encounter, and the **precautions** you would take to avoid serious problems:
   a) a cross-country ski day-trip in the foothills in early winter
   b) a cross-country ski day-trip in the mountains in late spring
   c) a three-day spring canoe trip down a Class II river section
   d) a one-day mountain climbing trip in mid-summer
   e) a week-long hunting trip in the northern bush in early fall
   f) a two-day summer horseback trip in the southern grasslands.

2. You are the leader of a hiking party, on a five-day backpacking trip in the Willmore Wilderness. On the third day a member of your party has fallen and appears to be seriously injured. It's getting late in the day, but you are still about an hour away from your planned campsite for the night. Clearly explain:
   a) the **precautions** you would have taken and the plans you would have made before the trip to prepare for such an emergency
   b) the **immediate steps** you would take to tackle this problem
   c) the **contingencies** you would need to consider.

3. Explain the precautions you need to take **before, during and after** an outdoor trip in western Alberta to avoid problems arising from encounters with:
   a) black bears
   b) grizzly bears
   c) bees
   d) snakes
   e) ticks
   f) mosquitoes.

4. You are in charge of planning for a mid-winter, two-day overnight cross-country ski trip in Kananaskis Park for a group of five experienced skiers. Prepare a complete a:
   a) personal equipment list
   b) group equipment list.

5. You are on a one-day hiking trip in Jasper National Park with some friends. You go off on your own to fish some "good spots" around the corner. Later you discover that you are completely lost, and now it's starting to get dark.
   a) What should be your first priority?
   b) What actions should you take immediately?
   c) What should you do about food, water, shelter and animals?
   d) What steps should you take to expedite your rescue?

6. You are one of the "friends" in question #5. What steps should you and the rest of the group take when you discover that your friend is missing?

7. Describe the early symptoms of hypothermia.

8. What steps should be immediately taken if you suspect
   a) a member of your party is showing signs of hypothermia?
   b) you are beginning to suffer from hypothermia?

9. List the minimum equipment which should be included in a survival kit.

Safety Guidelines (continued)

10. Describe the primary exposure hazard(s) in each of the following situations:
    a) hiking in the "badlands" at Dinosaur Provincial Park in mid-summer
    b) horseback riding in the northern bush country in early spring
    c) canoeing on the North Saskatchewan River in late fall
    d) mountain climbing in Banff National Park in mid-summer.

11. List four sources of "tinder" generally available in the wilderness to start a survival fire.

12 List and describe three Alberta wild plants that are poisonous, and three that are edible.

Survival Techniques

1. After experiencing an emergency and identifying the nature of the situation, name five steps that might be taken to assure safety of your guests.

2. Survival and first-aid kits must be available at all times. Describe/list five or more requirements for these kits.

3. An emergency shelter may often be set up using materials and natural structures. Identify four types of shelters.

4. When selecting a location for an emergency shelter, list four factors that should be considered.

5. Name eight methods that may be used for signalling for help in a survival situation.

6. List eight steps in the use of a two-way radio.

7. As dehydration affects mental and physical performance, water is necessary for survival. List five methods of obtaining water in a survival situation.

8. List three means of ensuring safe supply of food.

Ecotourism and Capacity

1. Define:
    a) ecotourism
    b) carrying capacity
    c) minimum impact/no-trace land use

2. Identify five stakeholder groups that may use the outdoor wilderness.

3. Explain when carrying capacity would be at its lowest in a specific wilderness area.

4. Name six factors that determine carrying capacity for a specific wilderness area.

5. Some of the best wildlife habitats have "an abundance of edge" (i.e., occur in areas where two ecosystems overlap). Explain what this means and give examples.

GUIDELINES FOR SAFE TRAVEL

The student:

☐ prepares and follows a schedule for travel

☐ informs responsible person(s) of destination, route, expected date of return and number in party

☐ selects and prepares appropriate food and equipment for trip

☐ uses orientation and navigation skills; e.g.:
- ☐ interprets natural signs
- ☐ uses compass and map

☐ avoids dangerous situations with wildlife; e.g.:
- ☐ monitors activities of wildlife in area
- ☐ disposes of garbage properly
- ☐ stores food safely
- ☐ maintains safe distance from wildlife

☐ prepares for weather and seasonal conditions; e.g.:
- ☐ identifies hazards particular to the area
- ☐ listens to weather/news forecasts
- ☐ watches for changes in current conditions
- ☐ dresses according to season, weather and activity
- ☐ carries survival equipment

GUIDELINES FOR SAFE TRAVEL (continued)

☐ follows safe procedures for the use of tools and equipment; e.g.:
- ☐ ensures good condition prior to use
- ☐ demonstrates safe use/appropriate care
- ☐ follows safe procedures for storing and carrying

☐ follows safety guidelines for the use of fuels; e.g.:
- ☐ adheres to legislation regarding fuel storage and use
- ☐ filters fuel before use
- ☐ adds fuel in ventilated area away from open flame
- ☐ stores fuel using safe methods

☐ conducts self-assessment of personal performance and identifies strengths and areas that need improvement

☐

☐

☐

SETTING UP EMERGENCY SHELTER

The student:

☐ identifies type of shelter that will best protect from the elements

☐ selects an appropriate location for shelter, considering water, fire and signalling needs

☐ demonstrates two or more basic shelter-building techniques that involve the use of materials and/or natural structures available in the outdoors; e.g.:
- ☐ fallen tree shelter
- ☐ lean-to shelter
- ☐ snow cave shelter

☐ demonstrates appropriate use of tools, equipment and safety devices

☐

☐

☐

SIGNALLING FOR HELP

The student:

☐ explains applications of the international signal for help

☐ demonstrates three or more methods of sending rescue signals in the outdoors; e.g.:
  - ☐ flare signals
  - ☐ fire signals
  - ☐ mirror signals
  - ☐ sound signals
  - ☐ information signals

☐ demonstrates methods for sending ground to air signals; e.g.:
  - ☐ evergreen boughs
  - ☐ tramped snow
  - ☐ use of contrasting materials

☐

MINIMUM IMPACT LAND USE

The student:

☐ constructs a shelter demonstrating the least possible impact on the environment

☐ uses environmentally friendly materials, and limits the use/disposal of petroleum products

MINIMUM IMPACT LAND USE
(continued)

☐ picks up other people's garbage, and carries out everything carried into the camp site

☐ demonstrates techniques for protecting and managing natural water supply; e.g.:
  - ☐ establishment of wash area
  - ☐ disposal techniques for waste water

☐ adheres to local fire restrictions

☐ uses existing fire box/pit whenever possible, and guards against flying embers

☐ builds fire away from roots and branches, and uses driftwood or deadfall for fire fuel whenever possible.

☐ follows marked paths and avoids ecologically sensitive areas

☐ considers carrying capacity of the area, and avoids nesting/spawning areas and young animals

☐ avoids removing plants and wildflowers, and disturbing sediment in streams

☐ critically examines outdoor procedures and suggests future refinements to land use practices

☐

STANDARD IS 1 IN EACH APPLICABLE TASK AREA

Rating Scale

The student:

4 Exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 Meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 Meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 Meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 Has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

RELECTIONS/COMMENTS

[The 1997 text was deleted September 1999.]

TASK CHECKLIST: Outdoor Experiences 2 WLD2030–1

TRIP PLANNING AND PREPARATION

The student:

☐ establishes specific objectives for an outdoor wilderness trip; e.g.:
  - ☐ goals and expectations
  - ☐ length of trip
  - ☐ destination
  - ☐ general itinerary and daily agendas

☐ prepares a camping menu for self that addresses:
  - ☐ expected caloric output
  - ☐ all food groups included in the *Canada's Food Guide for Healthy Eating*
  - ☐ concerns related to food spoilage
  - ☐ provisions for emergency

☐ plans for weather and seasonal conditions; e.g.:
  - ☐ identifies hazards particular to the area
  - ☐ listens to weather and news reports/forecasts

☐ incorporates guidelines for environmental awareness into trip planning; e.g.:
  - ☐ principles of ecotourism
  - ☐ consideration for carrying capacity
  - ☐ strategies for minimum impact land use

☐ identifies and obtains appropriate supplies, equipment and personal gear for the trip; e.g.:
  - ☐ water and food
  - ☐ tent, stove, axe
  - ☐ first aid and survival supplies
  - ☐ clothing and foot wear
  - ☐ toiletries

TRIP PLANNING AND PREPARATION (continued)

The student:

☐ conducts pre-trip assessment of supplies, equipment and personal gear; e.g.:
  - ☐ compares to trip checklist
  - ☐ assesses quality, quantity and condition
  - ☐ assesses weather and seasonal conditions
  - ☐ obtains missing and/or specialty items

☐ prepares supplies, equipment and personal gear for transportation; e.g.:
  - ☐ addresses weight restrictions
  - ☐ makes efficient use of space
  - ☐ packs food to prevent spoilage and minimize odour

☐ plans course of action to cope with potential emergency situations in the wilderness; e.g.:
  - ☐ extreme weather conditions
  - ☐ fire or flood
  - ☐ injury and illness
  - ☐ avalanche

☐ reviews legislation and policy requirements relevant to area being visited; e.g.:
  - ☐ information regarding dangers inherent in the area
  - ☐ permits/licences that may be required

☐

☐

CONDUCTING THE TRIP

The student:

☐ follows guidelines for safe travel in an outdoor environment; e.g.:
  - ☐ follows travel schedule as planned
  - ☐ uses orientation and navigational skills
  - ☐ identifies potential hazards and takes necessary precautions
  - ☐ dresses according to mode of travel, weather and season
  - ☐ watches for changes in current weather conditions

☐ sets up campsite following guidelines for comfort, safety and least possible environmental impact; e.g.:
  - ☐ selects appropriate campsite
  - ☐ erects tent or lean-to
  - ☐ assembles other amenities
  - ☐ protects food from wildlife and spoilage
  - ☐ protects equipment from the elements

☐ follows minimal impact guidelines in establishing and using campsite; e.g.:
  - ☐ latrine location and toilet procedures
  - ☐ wash area and procedures
  - ☐ fire site and use
  - ☐ garbage and waste water disposal

☐ complies with local, provincial and federal legislation relevant to activities that are undertaken

☐ assumes camp duties on a rotational basis; e.g.:
  - ☐ meal preparation
  - ☐ camp maintenance and hygiene

CONDUCTING THE TRIP (continued)

The student:

☐ monitors the activities of wildlife in the area and takes precautions to avoid dangerous situations

☐

☐

WILDERNESS INTERACTION

The student:

☐ identifies 25 insect, bird, mammal and/or other animal species

☐ identifies 25 tree, shrub and/or other plant species

☐ identifies, **while demonstrating appropriate safety/health precautions**, five different:
  - ☐ animal tracks and scat
  - ☐ hazardous plants

☐ identifies five or more uses of plants and/or animals for human survival and comfort in the wilderness environment

☐ spends three hours alone in a designated wilderness area, and shares experiences and coping strategies

WILDERNESS INTERACTION (continued)

The student:

☐

☐

BREAKING CAMP AND CONCLUDING THE TRIP

The student:

☐ follows appropriate procedures for breaking camp:
  - ☐ packs supplies, equipment and personal gear
  - ☐ takes down shelter
  - ☐ cleans site and removes waste
  - ☐ does circle tour of site

☐ conducts a post-trip assessment:
  - ☐ observations and personal impressions
  - ☐ activities well done
  - ☐ problems encountered
  - ☐ recommendations regarding future trips

☐

☐

STANDARD IS 2 IN EACH APPLICABLE TASK AREA

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

REFLECTIONS/COMMENTS

POST-TRIP ASSESSMENT FOR OUTDOOR EXPERIENCES 2

WLD2030–2

TASK	OBSERVATION/RATING					
Individual/Group Preparedness	4	3	2	1	0	N/A
Cooperation and Teamwork	4	3	2	1	0	N/A
Responsibility and Safety	4	3	2	1	0	N/A
Environmental Ethics	4	3	2	1	0	N/A

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Individual/Group Preparedness
- ☐ sets goals and follows instructions accurately
- ☐ adheres to established timelines
- ☐ identifies/assembles outdoor gear appropriate to the task
- ☐ uses time effectively
- ☐ identifies tasks well done
- ☐ identifies problems encountered and suggests solutions
- ☐ makes recommendations regarding future trips
- ☐ ____________________
- ☐ ____________________

Cooperation and Teamwork
- ☐ works with a range of peer members
- ☐ shares work appropriately among group members
- ☐ considers the ideas/suggestions of others
- ☐ identifies tasks well done
- ☐ identifies problems encountered and suggests solutions
- ☐ makes recommendations regarding future trips
- ☐ ____________________
- ☐ ____________________

Responsibility and Safety
- ☐ selects and uses appropriate equipment/materials
- ☐ follows safe procedures/techniques
- ☐ anticipates and advises of potential hazards
- ☐ practises proper sanitation procedures
- ☐ identifies tasks well done
- ☐ identifies problems encountered and suggests solutions
- ☐ makes recommendations regarding future trips
- ☐ ____________________
- ☐ ____________________

Environmental Ethics
- ☐ uses environmentally friendly materials
- ☐ picks up garbage and carries out everything that is carried in
- ☐ avoids ecologically sensitive areas
- ☐ demonstrates techniques for protecting water supply
- ☐ identifies tasks well done
- ☐ identifies problems encountered and suggests solutions
- ☐ makes recommendations regarding future trips
- ☐ ____________________
- ☐ ____________________

REFLECTIONS/COMMENTS:

RESEARCH PROCESS: Random and Systematic Sampling Techniques

FOR2060–1

TASK	OBSERVATION/RATING					
Preparation and Planning	4	3	2	1	0	N/A
Information Gathering and Processing	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not Applicable

TASK CHECKLIST

The student:

Preparation and Planning
- ☐ sets goals and establishes steps to achieve them
- ☐ creates and adheres to useful timelines
- ☐ uses personal initiative to formulate questions and find answers
- ☐ plans and uses time effectively

Information Gathering and Processing
- ☐ accesses a range of relevant in-school/community resources
- ☐ uses a range of information-gathering techniques
- ☐ interprets, organizes and combines information into a logical sequence
- ☐ records information accurately with appropriate supporting detail and using correct technical terms
- ☐ determines accuracy/currency/reliability of information sources
- ☐ gathers and responds to feedback regarding approach to the task

Content
- ☐ distinguishes between random and systematic sampling techniques
- ☐ defines/illustrates and explains the steps involved in conducting:
  - random plot samples
  - random transect samples
  - systematic plot samples
  - systematic transect samples

Content (continued)
- ☐ identifies sampling designs suited to gathering specific data regarding:
  - distribution of a tree species
  - growth, age and/or volume of trees
  - soil, water and/or wildlife characteristics
  - potential for recreation and/or agriculture
- ☐ explains sources of bias and error in random and systematic sampling designs, and problems related to use of the sample data in estimating forest values or populations
- ☐ ________________
- ☐ ________________

Collaboration and Teamwork
- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates solutions to problems

Information Sharing
- ☐ demonstrates effective use of two or more communication media:
  e.g., written, oral, audio-visual
- ☐ communicates ideas in a logical sequence with sufficient supporting detail
- ☐ maintains acceptable grammatical and technical standards
- ☐ cites five or more relevant information sources

REFLECTIONS/COMMENTS:

A summary of related programs currently offered at post-secondary institutions in Alberta is provided in this section (see "Forestry: Summary of Related Post-Secondary Programs").

A number of articulation agreements have been established with post-secondary institutions in Alberta. These agreements provide preferred entrance and/or advanced standing/credit for CTS students who have successfully completed designated courses. A current summary of articulation agreements in place that involve CTS courses is available through the provincial web site. For further information regarding particular articulation agreements, contact the post-secondary institution and/or review its respective calendar.

CREDENTIALLING

Students may earn partial or complete credentials recognized in the workplace and/or post-secondary institutions by demonstrating specified competencies within the CTS curriculum. The Forestry strand, in conjunction with courses from the Career Transitions strand, provides opportunities for students to develop competencies that link with a number of credentialling programs.

Of particular significance are credentials available through:

- First Aid certificate courses
- Alberta Safety Council programs
- Alberta Tourism Education Council (ATEC) programs.

Teachers may wish to explore opportunities for linking courses in Forestry with these and/or other credentialling programs. A partial list of credentialling opportunities relevant to CTS courses in Forestry is provided in this section (see "Credentialling Opportunities in Forestry").

Further information regarding these and other credentialling opportunities available to CTS students is provided in the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* (see Appendix 5: Planning Ahead—CTS Transitions into Post-secondary Programs and the Workplace), and also through the provincial web site.

	Other CTS Strands																				
Forestry Courses	Agriculture	Career Transitions	Communication Technology	Community Health	Construction Technolgies	Cosmetology Studies	Design Studies	Energy and Mines	Electro-Technologies	Enterprise and Innovation	Fashion Studies	Financial Management	Foods	Fabrication Studies	Information Processing	Legal Studies	Logistics	Management and Marketing	Mechanics	Tourism Studies	Wildlife
Theme: Social and Cultural Perspectives																					
FOR1010: Why Forestry?		▨													▨					▨	■
FOR1020: Forest Regions of Canada		▨	▨																	■	■
WLD1030: Outdoor Experiences 1		▨		■																■	■
FOR2010: Making a Difference		▨	▨												▨					▨	■
FOR2030: Managing Alberta Forests		▨													▨	▨					
WLD2030: Outdoor Experiences 2		▨		■												▨				■	■
FOR3010: Issues in Forestry		▨	▨					▨							▨					▨	■
Theme: Technology and Applications																					
FOR1050: Mapping & Aerial Photos		▨		▨				▨												▨	▨
FOR1060: Measuring the Forest 1		▨		▨																	▨
FOR2060: Measuring the Forest 2		▨		▨																	▨
FOR2070: Harvest Practices		▨			▨				▨							▨		▨	■		▨
FOR3060: Measuring the Forest 3		▨																			▨
FOR3070: The Forest Marketplace		▨			▨										▨			▨			
FOR3080: Forest Technology Applications		▨						▨	▨						▨						
Theme: Management and Conservation																					
FOR1090: Forest Ecology 1	▨	▨						▨													▨
FOR1100: Forests Forever 1		▨													▨						▨
FOR2100: Forests Forever 2		▨													▨						▨
FOR2120: Users in the Forest	▨	▨						▨							▨	▨					▨
FOR3090: Forest Ecology 2	▨	▨						▨													▨
FOR3110: Silviculture	■	▨		▨															■		
FOR3120: Integrated Resource Management	▨	▨						▨							▨	▨					▨

Provides many direct links with competencies in this strand. Students will reinforce, extend and apply a substantial number of knowledge and/or skill components in practical situations.	■
Provides some links with competencies developed in this strand, usually through the application of related technologies and/or processes.	▨

LINKAGES – *Forestry in Junior High*

Course Emphasis	Forestry Courses	Mechanics Courses	Wildlife Courses	Tourism Studies Courses
Forest Ecology (3 courses)	Why Forestry? *FOR1010* Forest Ecology 1 *FOR1090*		Natural History of Wildlife *WLD1020*	
Forest Inventory (4 courses)	Why Forestry? *FOR1010* Mapping & Aerial Photos *FOR1050* Measuring the Forest 1 *FOR1060*		Measuring the Value *WLD2020*	
Logging and Timber Utilization (5 courses)	Why Forestry? *FOR1010* Forest Regions of Canada *FOR1020* Harvest Practices *FOR2070*	Engine Fundamentals *MEC1040* Mechanical Systems *MEC1130*		
Personal and Recreational Use (6 courses)	Why Forestry? *FOR1010* Mapping & Aerial Photos *FOR1050*		Angling & Fish Management *WLD1080* Outdoor Experiences 1 *WLD1030* Outdoor Experiences 2 *WLD2030*	The Attractions Sector *TOU1070*

LINKAGES – *Forestry in Senior High*

Course Emphasis	Forestry Courses	Wildlife Courses	Tourism Studies Courses	Career Transitions Courses
Personal and Recreational (3 credits) Prerequisite: Outdoor Experiences 1	Making a Difference *FOR2010*	Outdoor Experiences 2 *WLD2030*	Adventure & Ecotourism *TOU3110*	
Silviculture (5 credits) Prerequisite: None	Forest Ecology 1 *FOR1090* Forest Ecology 2 *FOR3090* Silviculture *FOR3110* Forest Technology Applications *FOR3080*			Project 2A *CTR2110*
Harvest and Forest Products (5 credits) Prerequisite: Meauring the Forest 1 and 2	Managing Alberta Forests *FOR2030* Harvest Practices *FOR2070* The Forest Marketplace *FOR3070* Measuring the Forest 3 *FOR3060*			Project 2A *CTR2110*
Environmental Stewardship (3 credits) Prerequisite: None	Making a Difference *FOR2010*	Issues in Wildlife 1 *WLD2090*		Project 2A *CTR2110*
Forest Management (5 credits) Prerequisite: None	Issues in Forestry *FOR3010* Users in the Forest *FOR2120* Integrated Resource Management *FOR3120*	Interactions *WLD2060*		Project 2A *CTR2110*

LINKAGES – *Forestry: Connections Across the Curriculum*

Across the Curriculum

Forestry Courses	Junior High							Senior High											
	Language Arts	Social Studies	Mathematics	Science	Health & PLS	Physical Education	Fine Arts	English	Social Studies	Mathematics	Science (General)	Biology	Chemistry	Physics	CALM	Physical Education	Fine Arts	Social Sciences	Second Language
Theme: Social and Cultural Perspectives																			
FOR1010: Why Forestry?	▨	▨		▨				▨	▨		▨				▨		▨		
FOR1020: Forest Regions of Canada	▨	▨		■				▨	▨		▨	▨					▨		
WLD1030: Outdoor Experiences 1						▨										▨			
FOR2010: Making a Difference	▨	▨		▨				▨	▨								▨		
FOR2030: Managing Alberta Forests	▨	▨						▨	▨										
WLD2030: Outdoor Experiences 2						▨										▨			
FOR3010: Issues in Forestry	▨	▨		▨				▨	▨										
Theme: Technology and Applications																			
FOR1050: Mapping & Aerial Photos		▨	▨			▨										▨			
FOR1060: Measuring the Forest 1			▨	▨		▨						▨				▨			
FOR2060: Measuring the Forest 2			▨	▨		▨						▨				▨			
FOR2070: Harvesting Practices	▨			▨				▨				▨			▨				
FOR3060: Measuring the Forest 3				▨								▨							
FOR3070: The Forest Marketplace	▨	▨						▨	▨						▨				
FOR3080: Forest Technology Applications	▨			▨				▨											
Theme: Management and Conservation																			
FOR1090: Forest Ecology 1				■								■							
FOR1100: Forests Forever 1	▨			▨				▨			▨								
FOR2100: Forests Forever 2	▨			▨				▨			▨								
FOR2120: Users in the Forest	▨							▨											
FOR3090: Forest Ecology 2				■								■							
FOR3110: Silviculture				▨							▨	▨			▨				
FOR3120: Integrated Resource Management	▨							▨											

Provides many direct links with course content. Students will reinforce, extend and apply a substantial number of knowledge and/or skill components in practical contexts.	■
Provides some links with course content, usually through the application of related technologies and/or processes.	▨

LINKAGES – *Forestry: Correlations with Environmental and Outdoor Education 7, 8 and 9*★

CTS Courses: Forestry

Themes/Topics: Environmental and Outdoor Education	Why Forestry? FOR 1010	Forest Regions of Canada FOR 1020	Outdoor Experiences 1 WLD 1030	Mapping & Aerial Photos FOR 1050	Measuring the Forest 1 FOR 1060	Forest Ecology 1 FOR 1090	Forests Forever 1 FOR 1100	Making a Difference FOR 2010	Managing Alberta Forests FOR 2030	Outdoor Experiences 2 WLD 2030	Measuring the Forest 2 FOR 2060	Harvest Practices FOR 2070	Forests Forever 2 FOR 2100	Users in the Forest FOR 2120	Issues in Forestry FOR 3010	Measuring the Forest 3 FOR 3060	The Forest Marketplace FOR 3070	Forest Technology Applications FOR 3080	Forest Ecology 2 FOR 3090	Silviculture FOR 3110	Integrated Resource Management FOR 3120
OUTDOOR CORE																					
Regard for self, others and the environment			x	x	x					x	x					x					
Trip preparation and safety			x							x											
Safe and comfortable outdoor living skills			x							x											
Applying information for safe route planning			x	x						x											
Environmentally responsible outdoor activities			x		x					x	x					x				x	
Physical fitness for outdoor activities																					
PERSONAL AND GROUP DEVELOPMENT																					
Respect and appreciation for self and others	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Setting realistic goals	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Personal communication skills	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Relationship of individuals to groups	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Group process skills	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ENVIRONMENTAL CORE																					
Diversity of environments and life forms	x	x				x													x		
Interactions within environments	x	x				x													x	x	
Natural and human changes to the environment	x					x	x						x		x				x		
Air, water and soil cycles	x					x													x	x	
The sun as the primary energy source on Earth						x													x		
OUTDOOR EXPEDITIONS																					
Skill and judgement in outdoor expeditions			x	x	x					x	x					x				x	
Positive self-concept and regard for others			x							x											
Group problem solving and group living skills			x							x											
Regard for environments and responsible outdoor judgement			x	x	x					x	x					x				x	
ENVIRONMENTAL INVESTIGATIONS																					
Environmental investigation skills		x				x													x	x	
Strategies for responding to environmental concerns							x	x					x		x						x
COMMITMENT TO ACTION																					
Outdoor recreation as part of healthy lifestyle			x							x											
Appreciation of environments through respectful use	x		x				x	x		x			x		x						x
Responsible use of local and global environments	x		x				x	x		x			x		x						x
Plans to make personal growth a lifelong process								x							x						

★September 1997: All practical arts courses replaced by Career and Technology Studies.

CREDENTIALLING – *Credentialling Opportunities in Forestry*

The following credentialling opportunities link with courses in the Forestry strand. Further information (including current contacts) for these and other credentialling opportunities available to CTS students is available through the provincial web site.

Credential/Certificate	Training/ Credentialling Agency	Related CTS Strands/Courses	Program Description
All Terrain Vehicle Rider	Alberta Safety Council	FOR2120: Users in the Forest FOR3120: Integrated Resource Management CTR3040–3080: Practicum Courses	An industry-based credentialling program that offers certification in ATV use for recreational or industrial purposes. Deals with pre-ride inspection, range signals, rules and warm-up exercises, riding strategies, circles, turns, stops and traversing hills. Certificates are issued upon successful completion of an examination.
Bear Awareness and Avoidance: • Basic • Advanced	Alberta Safety Council	WLD1030: Outdoor Experiences 1 FOR2030: Outdoor Experiences 2 FOR1060: Measuring the Forest 1 FOR2060: Measuring the Forest 2 CTR3040–3080: Practicum Courses CTR2210: Workplace Safety	A safety awareness program that offer certification at two levels. Each course deals with species recognition and bear biology, bear behaviour, avoiding bear problems and bear deterrents. Certificates are issued upon successful completion of an examination.
First Aid in the Wilderness	St. John Ambulance	WLD1030: Outdoor Experiences 1 WLD2030: Outdoor Experiences 2 FOR1060: Measuring the Forest 1 FOR2060: Measuring the Forest 2 CTR3040–3080: Practicum Courses CTR2210: Workplace Safety	A credentialling program designed for individuals who work, live or play in wilderness or remote areas. Deals with how to cope with emergencies and provide first aid in remote settings where medical services are not available. Certificates are issued upon successful completion of an examination.
Canadian Tourism Industry Certification: • Outdoor Guide • Freshwater Angling Guide • Hunting Guide	Alberta Tourism Education Council	WLD1030: Outdoor Experiences 1 WLD2030: Outdoor Experiences 2 CTR3040–3080: Practicum Courses	Industry-based certification programs that address standards established by the tourism industry. Certificates are awarded to individuals who demonstrate occupational standards through written and practical testing.

SECTION I:
LEARNING RESOURCE GUIDE

This section of the GSI explains how to obtain up-to-date information regarding learning resources that have been identified to support the delivery of courses in this strand. It provides directions for searching, by electronic means, the most current information on:

- authorized student basic, support and authorized teaching resources—resources approved by Alberta Learning for use in this strand
- provincial software agreements—licensing agreements that allow school jurisdictions to purchase educational software at significantly reduced prices
- additional sources of information—other titles and information sources that may provide potentially useful ideas for courses in this strand.

The resource listings compiled for this strand are time sensitive and subject to change. Teachers are encouraged to browse the web sites identified in this guide on a regular basis for the most up-to-date information on new learning resources, more recent versions/editions and other sources of support.

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NOTICE

SECTION I: LEARNING RESOURCE GUIDE

Alberta Learning authorizes a variety of resources that support learning and teaching in this strand. The 1999 amendments to Section I provide directions for obtaining, by electronic means, up-to-date information about authorized resources and other sources of information.

Teachers are encouraged to browse the web sites identified in this guide on a regular basis for the most up-to-date information on:

- authorized resources; i.e., student basic, support, and authorized teaching
- provincial software licensing agreements
- additional sources of support.

The lists of authorized resources that were previously included in Section I have been removed from the 1999 amendments to this document. From 1999 onward, up-to-date listings of authorized resources are to be accessed through:

- the Learning Resources Distributing Centre *Buyers Guide*, available electronically at <http://ednet.edc.gov.ab.ca/lrdc>
- the Authorized Resources Database, available electronically at <http://ednet.edc.gov.ab.ca> under Students and Learning, Learning and Teaching Resources.

Subsequent amendments to the *Guide to Standards and Implementation* for other CTS strands will include similar changes to Section I.

LEARNING RESOURCE GUIDE

This section of the guide provides directions for obtaining, from electronic sources, up-to-date information about learning resources that support the delivery of CTS courses in this strand. Teachers may use the information to search for current listings of:

- authorized resources that support learning and teaching
  - basic learning resources
  - support learning resources
  - authorized teaching resources
- provincial software licensing agreements
- additional sources of information
  - other titles and sources that contain potentially useful information and ideas
  - web sites that may provide access to global networks of information.

Learning resources for this strand will continue to be updated in order to maintain and expand access to current information suitable for use in a variety of CTS learning environments.

CTS AND THE RESOURCE-BASED CLASSROOM

CTS supports the development of resource-based classrooms where a variety of appropriate, up-to-date print and nonprint resources are available. This approach enables students to:

- interact with a wide range of information sources
- access and use information sources appropriately
- take an active role in managing their own learning.

CTS identifies learning resources in print, software, video and CDROM formats, as well as other sources of information available in the community and through the Internet.

Collaboration between the teacher–librarian and CTS teacher in planning resource-based research activities will ensure that students develop research skills as they increase their understanding of subject content. Planned and purposeful research activities will help students learn to gather, process and share information, and will require access to a range of current print and nonprint resources available in the school library, other libraries, the community and/or from other sources.

Teachers are encouraged to reference *Focus on Research: A Guide to Developing Students' Research Skills,* referenced in the Alberta Learning Monographs section of this guide, when planning research activities.

LEARNING RESOURCE POLICY

Alberta Learning authorizes resources considered appropriate for provincial programs of study and that have met criteria for acceptability. The authorized resources for CTS include:

- student basic—resources that address the majority of the learner outcomes in one or more CTS courses
- student support—resources that assist in addressing some of the learner outcomes of a CTS course
- authorized teaching—resources that support the implementation of one or more CTS courses and assist teachers in the instructional process.

The Learning Technologies Branch also has developed distance education materials for a number of CTS courses. These course materials, also authorized by the province of Alberta, include a range of print and electronic products that can be used to support teaching and learning in CTS.

School boards may identify and approve instructional materials for use in their schools under section 44 (2) of the *School Act.* Many school boards have delegated the power to approve resources to school staff or other board employees under section 45 (1) of the *School Act.*

For further information on resource policy and definitions, refer to the *Student Learning Resources Policy* and *Teaching Resources Policy* or contact:

Learning Resources Unit
Curriculum Standards Branch
Alberta Learning
5th Floor, Devonian Building, East Tower
11160 Jasper Avenue
Edmonton, AB, Canada T5K 0L2
Telephone: 780–422–4872 (to be connected toll free inside Alberta dial 310–0000)
Fax: 780–422–0576
Internet: <http://ednet.edc.gov.ab.ca>

HOW TO OBTAIN UP-TO-DATE INFORMATION

Authorized Resources

A searchable online index of all student basic, support and authorized teaching resources for courses in this CTS strand is provided through the Authorized Resources Database on the provincial web site. Each entry in the database provides bibliographic information about the resource, an annotation where appropriate, a correlation to specific one-credit courses in this strand, and information about how to obtain the resource.

The Authorized Resources Database can be accessed at <http://ednet.edc.gov.ab.ca>:

- click on "Students and Learning"
- select "Learning and Teaching Resources"
- then select the "Authorized Resources Database".

When using the database to search for resources within a particular CTS strand:

- enter the strand name as the "Curricular Area"
- select the desired "Format" and "Authorization Status" from the options provided
- click on "Submit".

The database begins each list of student basic, support and authorized teaching resources with those resources that been authorized most recently. Upon first entering the database, the user is provided with a title and brief description of each resource, accompanied with copyright information, authorization status, number of pages and intended use by curriculum area and grades. Then by clicking on the "More" icon, a more detailed description of each resource can be obtained, along with additional information regarding publisher/distributor, physical appearance, cost, correlation to individual CTS courses, how to obtain the resource and where the resource can be previewed.

Up-to-date information regarding the availability of distance education materials for CTS courses (i.e., print products, electronic products, products in development) can also be obtained through the web site:

- click on "Students and Learning"
- select "Learning and Teaching Resources"
- then select the "Learning Technologies Branch".

Teachers are encouraged to browse the Authorized Resources Database and Learning Technologies Branch Homepage on a regular basis for the most up-to-date information on authorized learning resources and distance education course materials that are available.

Provincial Software Agreements

Due to frequent upgrades occurring in productivity software (e.g., software packages developed for word processing, spreadsheet, database, multimedia, drawing and design applications), this kind of software is no longer authorized by the department. However, a number of provincial licensing agreements for software products are in place that allow school jurisdictions to purchase productivity software at significantly reduced prices.

An up-to-date listing of provincial software agreements can be obtained through the "Technology" section of the web site. Teachers are encouraged to browse this listing on a regular basis for information regarding additional provincial software licensing agreements that may be established from time to time.

HOW TO ORDER AUTHORIZED RESOURCES

Most of the student basic, support and authorized teaching resources can be obtained from the Learning Resources Distributing Centre (LRDC). The LRDC *Buyer's Guide*, available in electronic or print formats, provides a complete listing of resources available for purchase and additional ordering information. The LRDC can be contacted at:

12360 – 142 Street
Edmonton, AB, Canada T5L 4X9
Telephone: 780–427–5775 (to be connected toll free inside Alberta dial 310–0000)
Fax: 780–422–9750
Internet: <http://ednet.edc.gov.ab.ca/lrdc>.

It is recommended that all resources be previewed prior to purchase. In some instances, teachers may find it desirable to purchase one copy for their reference and additional copies as required.

ADDITIONAL SOURCES OF INFORMATION

There are many additional sources of information—other titles, and information available from government, professional associations, industry organizations and community agencies—that may provide potentially useful ideas for courses in this strand. Of further note are a number of web sites relevant to courses in this strand, which when used effectively, can provide both teachers and learners with a global network of useable information.

The responsibility to evaluate these additional sources of information prior to selection rests with the user, in accordance with any existing local policy.

CTS Council

An online listing of additional sources of information relevant to courses in this strand is available on the CTS Council web site at <http://ctscouncil.com>. This site can be accessed through the CTS homepage by going to "Related Sites".

Each entry in this listing includes the name of the resource or agency/organization, appropriate distributor/contact information, and where possible a description of the materials/services available.

The CTS Council welcomes your suggestions for maintaining and expanding the sources of information that are shared through this site.

Telus 2Learn Alliance

A searchable online listing of web sites containing information and materials relevant to courses in this strand is available through the Telus 2Learn Alliance at <http://www.2Learn.ca>. This site can also be accessed through the CTS homepage by going to "Related Sites".

The Telus 2Learn Alliance welcomes your feedback and ideas on these and other sites relevant to courses in this strand.

OTHER SOURCES OF SUPPORT

ACCESS: The Education Station

ACCESS: The Education Station offers a variety of resources and services to teachers. For a nominal dubbing and tape fee, ACCESS: The Education Station will copy audiotapes and videotapes for teachers.

ACCESS: The Education Station publishes listings of audiocassettes and videocassettes as well as a comprehensive programming schedule. For further information, visit their web site at <http://www.accesstv.ab.ca>.

National Film Board of Canada

The National Film Board of Canada (NFB) has numerous audiovisual resources that may be suitable for use in CTS courses. While these resources can be ordered directly from the NFB, many of their materials are also available in public libraries.

For a list of NFB audiovisual resources indexed by title and subject, or to place an order for audiovisual resources, visit their web site at <http://www.nfb.ca>.

Media and Resource Centres

There are a number of urban media and regional resource centres across the province that provide on a loan basis instructional materials that may support CTS courses. Teachers are encouraged to contact their local media or resource centre for further information regarding services that are available.

Urban Media Centres

Calgary Board of Education
Calgary, AB, Canada
Web site: <www.cbe.ab.ca>

Calgary Separate School Board
Calgary, AB, Canada
Web site: <www.crcssd1.calgary.ab.ca>

Edmonton Catholic School District
Edmonton, AB, Canada
Web site: <www.ecs.edmonton.ab.ca>

Edmonton Public School Board
Edmonton, AB, Canada
Web site: <www.epsb.edmonton.ab.ca>

Elk Island Public School Division
Sherwood Park, AB, Canada
Web site: <www.ei.educ.ab.ca>

Medicine Hat School District
Medicine Hat, AB, Canada
Web site: <www.sd76.ab.ca>

Northern Lights School Division
Spirit River, AB, Canada
Web site: <www.nlsd.ab.ca>

Red Deer Public School District
Red Deer, AB, Canada
Web site: <www.rdpsd.ab.ca>

Regional Resource Centres

Zone 1
Zone One Regional Resource Centre
Peace River, AB, Canada
Web site: (not yet available)

Zone 2/3
Central Alberta Media Services
Sherwood Park, AB, Canada
Web site: <www.cams.ab.ca>

Zone 4
Parkland Regional Library
Lacombe, AB, Canada
Web site: <www.prl.lacombe.ab.ca>

Zone 5
South Central Alberta Resource Centre
Strathmore, AB, Canada
Web site: (available in September 1999)

Zone 6
Southern Alberta Learning Resource Centre
Lethbridge, AB, Canada
Web site: (available in July 1999)

Alberta Learning Monographs

The following monographs are available for purchase from the Learning Resources Distributing Centre. Refer to the "Support Documents" section or the "Legal, Service and Information Publications" section in the LRDC *Buyers Guide* for ordering information and costs.

- *The Emerging Student: Relationships Among the Cognitive, Social and Physical Domains of Development,* 1991 (LRDC Product No. 161555)

  This document examines the child, or student, as a productive learner, integrating all the domains of development: cognitive, social and physical. It emphasizes the need for providing balanced curriculum and instruction.

- *Students' Interactions Developmental Framework: The Social Sphere,* 1988 (LRDC Product No. 161399)

  This document examines children's perceptual, structural and motor development and how such physical development affects certain learning processes.

- *Focus on Research: A Guide to Developing Students' Research Skills,* 1990 (LRDC Product No. 161802)

  This document outlines a resource-based research model that helps students manage information effectively and efficiently, and gain skills that are transferable to school and work situations. This model provides a developmental approach to teaching students how to do research.

- *Teaching Thinking: Enhancing Learning,* 1990 (LRDC Product No. 161521)

  Principles and guidelines for cultivating thinking, ECS to Grade 12, have been developed in this resource. It offers a definition of thinking, describes nine basic principles on which the suggested practices are based, and discusses possible procedures for implementation in schools and classrooms.

[The 1997 text was deleted September 1999.]

Note

Effective September 1999, pages I.9 to I.56 have been deleted and not replaced.

FORESTRY

SECTION J: SAMPLE STUDENT LEARNING GUIDES

The following pages provide background information, strategies and a template for developing student learning guides. Also included at the end of this section are several sample student learning guides for Forestry.

A student learning guide provides information and direction to help students attain the expectations defined in a specified CTS course. It is designed to be used by students under the direction of a teacher.

Many excellent student learning guides (SLGs) are available for use and/or are in the process of being developed. While Alberta Education provides a development template accompanied by some samples, most student learning guide development is being done by individuals and organizations across the province (e.g., school jurisdictions, specialist councils, post-secondary organizations).

Note: A student learning guide is not a self-contained learning package like those developed by the Learning Technologies Branch (LTB) or Distance Learning Options South (DLOS).

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Effective September 1999, pages J.17 to J.22 have been deleted and not replaced.